A STUDY
ON
THE ROLE OF INFORMATION TECHNOLOGY IN MARKETING PHARMACEUTICAL PRODUCTS

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Guru Ghasidas University, Bilaspur (C.G.)
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of

DOCTOR OF PHILOSOPHY
in
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under
FACULTY OF MANAGEMENT & COMMERCE



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CERTIFICATE OF THE SUPERVISOR

(Para 12 b)

This is to certify that the work entitled ***A STUDY ON THE ROLE OF INFORMATION TECHNOLOGY IN MARKETING PHARMACEUTICAL PRODUCTS*** is a piece of research work done by **Shri Ajeya Jha** under my guidance and supervision for the degree of Doctor of Philosophy of **Guru Ghasidas University, Bilaspur (C.G).** That the candidate has put in an attendance of more than 200 days with me.

To the best of my knowledge and belief, the thesis:

(i) Embodies the work of the candidate himself;

(ii) Has duly been completed;

(iii) Fulfills the requirements of the ordinance relating to the Ph. D. degree of the University, and

(iv) is up to the standard both in respect of contents and language for being referred to the examiner.

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Dedicated to

Late Dr. Gangadhar Jha
My Revered Father

and

Late Mrs. Seema Jha
My Revered Didi

Their Deep Love And Blessings
Help Me To Live And Dream

DECLARATION BY THE CANDIDATE

(Para 12 b)

I declare that the thesis entitled ***A Study On The Role Of Information Technology In Marketing Pharmaceutical Products*** is my work conducted under the supervision of **Dr. Lalit Prakash Pateriya** at **Department of Management Studies, Guru Ghasidas University, Bilaspur (C.G.)** approved by Research Degree Committee. I have put in more than 200 days of attendance with the supervisor at the centre.

I further declare that to the best of my knowledge the thesis does not contain any part of any work, which has been submitted for the award of any degree either in this University or in any other University/Deemed University without proper citation.

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Last, but not the least, I thank all those who have directly or indirectly helped me and whose names have now escaped from my memory. I gratefully acknowledge their help which indeed has been immeasurable.

(Ajeya Jha)

PREFACE

Information Technology has heralded a new era of vision and greatly enhanced capabilities. To enhance and improve its impact on our lives Information Technology has been very keenly observed and investigated by a whole lot of researchers. Many of them have shown interest in understanding its potential to make marketing a more meaningful proposition. Marketing, as we know has assumed prime importance in our socio-economic sphere.

This research work is aimed to study the role of Information Technology in marketing of pharmaceutical products. The research work has been undertaken to understand the response of Pharmaceutical Industry in general and Indian Pharmaceutical Industry in particular, to comprehend the barriers they have to cross to harness its benefits; to analyze the trends of use of IT for marketing pharmaceutical products; to grasp the causes of successful and failed strategies attempted so far and to formulate clear guidelines for a smooth, enriched and purposeful integration of IT with pharmaceutical marketing practices. The emphasis of this study is on prescription drugs.

The researcher considers it a relevant and significant study as healthcare has immense value for human happiness and availability of right medicines at right prices and at right time is an important component of healthcare system. It can certainly help in attaining such an objective.

The hypothesis for this work is, power of IT has been portrayed as larger-than-life and hence its promises may fail to live up to our expectations. IT will not change the traditional practices of marketing pharmaceutical products dramatically. This is not to deny the legitimate contributions that IT is and will be making to the pharmaceutical marketing. The researcher hopes to make a realistic assessment of the potential that IT brings forth to strengthen and consolidate pharmaceutical marketing.

Keeping in mind the macro nature of the scope of study a multi pronged methodology was planned. It involves collecting primary information from pharmaceutical marketers of representative companies and physicians

through personal/telephonic interviews. Both structured and unstructured interview schedule were used. Information was also collected online from global market experts by joining an exclusive e-mail networking community organized by Pharma Marketing Network owned and operated by VirSci Corporation. It involved collecting relevant case studies also. Secondary information was collected from internet, journals, magazines and news dailies.

The information collected helped to understand the influence of information technology on market strategies, market segmentation, positioning strategies, advertising, pricing decisions, distribution, sales force management, product development, retailing, legal and ethical aspects of pharmaceutical marketing.

The research work is divided into four chapters. Chapter One, the *Conceptual Framework* contains three sections. *Section One* is devoted to *Information Technology*. Similarly Section Two and Three are devoted to *Marketing* and *Pharmaceutical Products* respectively.

Chapter Two entitled *Methodology* contains Objectives, Nature of Study Research Design, Review of Literature,; Universe/Population; Sampling Frame; Sampling Methods; Observational Units; Sources of Data; Data Collection Methods; Analytical Methods; Hypotheses; Limitations of the Work Undertaken and Profile of the Companies.

Chapter Three entitled *Observations, Analyses and Findings* contains General Observations and findings related to marketing mix for pharmaceutical products and analyses of data.

Chapter Four entitled *Conclusions, Recommendations And Suggestions* contains the final conclusions drawn by interpretation and findings and observations also the recommendations for successful application of information technology for marketing pharmaceutical products and suggestions for future researcher.

12 Appendices are appended. Appendices include email conforming acceptance of researcher's membership as **Appendix I**; List of experts consulted as **Appendix II**; Details of online correspondences as **Appendix**

III; Copy of certificate recommending support for the research work, issued by Mr. S. D. Joag, Secretary, Indian Pharmaceutical Association, as **Appendix IV**; Names and contact details of companies visited as **Appendix V**; Details of companies and person contacted as **Appendix VI**; Copy of the Interview Schedule-I meant for marketing executives of pharmaceutical firms as **Appendix VII;** Copy of the Interview Schedule-II meant for physicians as **Appendix VIII;** Interview Schedule-III meant for physicians reluctant to meet MRs as **Appendix IX;** List of journals and magazines that were mainly referred for secondary information as **Appendix X;** Names and contact details of organizations/individuals who provided valuable primary information online to complete this research work as **Appendix XI;** Details of papers presented and published have been shown as **Appendix XII.**

Bibliography in the form of references is appended at the last.

Finally, as no research work is free from limitations, so the same happened with this work. The researcher has made all possible efforts to minimize the effects of limitations and to make the thesis free from typing errors, even than the researcher undertakes full responsibility for such limitations and mistakes. The researcher unhesitatingly admits that he should alone be blamed for faults, errors and mistakes that might have crept into the work. Notwithstanding, this work, which is an out come of in-depth study of last five years, may hopefully be useful to future researchers who are interested in pharmaceutical marketing.

Place : Bilaspur (C.G.)

Date : 29th December 2005

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(Ajeya Jha)

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CONCEPTUAL FRAMEWORK

Introduction

Ever since the time immemorial Food, Shelter, Health and Education have been the main stay of human society. Other hopes and aspirations have been built after ensuring due fulfillment of these basic needs. Healthcare, thus, has immense value for human happiness. Consequently when World Health Organization (WHO) looked for a just objective for its existence, *Health for all by the year 2000* was inevitable, natural and just slogan they adapted. It is WHO and all national Governments that have sought to provide effective medicines at affordable prices for every one in their sacred affirmed mission. Availability of medicines, therefore, is a high priority task at all levels of governance.

Private players have been encouraged to manufacture and market pharmaceutical products because of the natural advantage of efficiency, efficacy and economy that private sectors offer. Government keeps a close watch on availability and affordability of medicines and encourages pharmaceutical companies to find, produce and distribute drugs. Such an approach has given birth to a pharmaceutical industry that is powerful, rich and sophisticated. It is expected that it should act and behave in a more responsible manner than other industries. It has needed to maintain trustworthiness of highest order. High expectations from the society, however, make it vulnerable. It is in fact the proverbial glass house. Thus changes, including opportunities, alarm it. It takes recourse to prompt measured and cautious responses even when others rush in to embrace fresh opportunities. They are unadventurous in their outlook and approach.

Information Technology has heralded a new era of vision and greatly enhanced capabilities. It has shaped new dreams. It has also forced a paradigm shift in the way we think, act and expect. How does pharmaceutical Industry respond to this new factor? What will it lose if it responds slowly? What does it risk if it rushes to it? How much time will it

take to put up a matured response? Is the learning graph curve too difficult? Will it change the marketing practices dramatically as we have seen with sectors such as banking, software and books? What threats does it pose? How can it be misused and abused by the unethical players? It is important to find answer to these questions. The research work has been undertaken to understand the response of Indian pharmaceutical industries. It envisages to comprehend the difficulties they face to metamorphose IT from foe to a friend. It endeavors to analyze the trends of use of IT for marketing pharmaceutical products. It aspires to grasp the causes of successful and failed strategies attempted so far. It aims to formulate clear guidelines for a smooth, enriching and purposeful integration of Information Technology with Pharmaceutical marketing practices.

To make the study perceptible to scholars with non-pharmaceutical background also it is assumed that a preliminary introduction of information Technology, Marketing and Pharmaceutical Products needs to be deliberated. Hence the introduction hereafter unfolds accordingly.

CHAPTER - ONE

CONCEPTUAL FRAMEWORK

SECTION - ONE

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CONCEPTUAL FRAMEWORK

SECTION - ONE

INFORMATION TECHNOLOGY

In this section an overview of information technology its meaning, concepts, terminologies, components and systems and role of information technology on the functioning of an organization is given.

INFORMATION TECHNOLOGY

Information Technology abbreviated as IT, is a broad term covering all aspects of managing and processing information. IT professionals design, develop, support and manage computer software, hardware, and networks, such as the Internet. The applications of these technologies are all around us. In fact, IT is a part of our life in ways we are not even aware of. Computer software used to write a term paper, computer generated animation in a blockbuster movie, networks and programs that let you order books over the Internet, and satellites and systems that enable NASA to conduct remote space exploration are all developed by creative and dedicated IT professionals

Information technology (IT) is an equipment or interconnected system or subsystem of equipment used to acquire, store, manage, display, or transmit information. The term information technology includes computers, software, websites, and computer equipment such as monitors and printers.

The growth of IT has been tremendous over a short span of time. Now a days modern devices big or small are incorporating some sort of computer in them. But IT has come to mean a lot. IT has changed the societies in different geographical areas economically, socially and also culturally.

There is a major change in the perception about IT. Initially IT was thought to be an infrastructure in itself but now IT is being considered as a tool to aid infrastructure development. This way domain of IT is getting expanded.

IT has entered into almost every corner in our life. Some applications of IT are as folows:

Smart homes are becoming reality now a days. A house that wakes you up in time, gives you a list of appointments for the day and gives you the directions to get there, is a smart home. This list of jobs performed by a smart home can grow. These automated houses which can even control environment are becoming very popular.

Smart Car which helps the driver in finding out the best route to a destination is also a reality now. This car equipped with intelligence can even alert the driver for efficient driving.

E-governance is a new concept. The government can provide e-devices to the population, considerably shortening the time to get things done and improving overall efficiency in governance. For eaxample, Tax returning is a tedious process which is also time consuming. Due to this fact many individuals keep away themselves from paying tax to the government, but e-governance has improved the situation and it has become possible to pay the taxes through internet. This has encouraged citizens to pay the taxes.

In an airport, moving through immigration is almost a walk now a days, electronically tagged ID cards, showing residence status. No passport stamped, no forms filled. All the required data comes via the network on the immigration officers computer. Singapore interntional airport is an example.

Paperless office management expected to be a reality very soon. This is going to reduce even corruption in different offices which is one unfortunate fact in many countries throughout the world.

Pervasive computing is going to be the future of the human society. Users can link all types of computing devices with people and places via the internet. In this concept, people are mobile, appliances are fixed and everything has a webpage. All appliances would be capable of retrieving the information for use of the person. Hewlett Packard has taken initiatives in this regard. Intelligence in different devices has also been incorporated.

Grid computing, digital camera, home theatre, video-on-demand, mobile phones, wireless LAN etc. are some of impotant applications of IT.

IT has revolutionized the human gravity, activity and commerce worldover. It has brought multiple benefits with human reach like nothing had done ever before. It has also given an endless array of opportunities to the youth of today.

Definition and Background

IT is a collective term for various technologies involved in processing, storage and distribution of information. They include computing, telecommunications, microelectronics etc., IT has enabled speed up in work-place as well as helped decision makers considering a big volume of data when making decisions.

Prof. L. M. Prasad defines formally information technology as "Information technology consists of Hardware, Software, Database Management, Telecommunications and other information processing technologies used in computer based information systems."

To understand the entire spectrum of IT, one should have exposure to the following areas of studies:

I. The techniques of data acquisition, storage and database management in various application sectors;

II. Transmissionary distribution of data from one location to a distant site through computer networks;

III. Techniques of processing of multimedia information, since some of the data to be transmitted are of multimedia nature like image, video, animation etc.;

IV. Compression of multimedia data, which is terribly voluminous, specially speech compression;

V. Various decision support systems and expert systems (to interpret data) and background of the development of these systems;

VI. Analysis and interpretation of all kinds of information and to extract valuable hidden information from huge amount of data i.e. soft computing techniques. Knowledge about soft computing techniques like Genetic Algorithm, Neural Network etc.;

VII. Concepts of graph theory or web graph as the whole internet or any network is basically a graph.;

VIII. Security of computer networks as well as a computing systems;

IX. Knowledge about different application areas of IT like Geographical Information Systems, Remote sensing, Health Care, Telemedicine etc.;

X. E-commerce and its security aspects as well as knowledge about different types of cyber crimes and

XI. Knowledge about design and deployment of information system

Functions of Information Technology

Prof. L. M. Prasad determines that in the context of information system, information technology performs a number of functions which are as follows:

1. **Data Capture**: The first function of information technology is to capture and convert it in a form which can be stored or transmitted. The capturing of data on documents or by direct entry is necessary for other activities in information systems. For data capturing, key boards, bar codes, scanners, visual display unit, video camera, mouse and other input devices are used.

2. **Data Storage:** Through information technology, data are stored in storage media for later retrieval. Computer system translates all the data and instruction into binary form for storage purpose. For data storage, various memory devices such as magnetic tape, floppy disc, hard compact disc read only memory (CD-ROM), digital video disk (DVD), and flash memory are used. Data can be stored in sequential or random form and can be indexed also.

3. **Data Transmission**: Through information technology, data can be transmitted from one place to another place or from one computer to another computer. For this purpose, various devices like modem, cables etc are used. For transmitting data, various types of networks, such as local area network (LAN), wide area network (WAN), value

added network (VAN), wireless broadcast network, Internet, intranet and extranet are used.

4. **Data Processing**: Data processing is the conversion of data into meaningful information. The processing is done in a series of operations which convert input (data) into output (information). Data processing function is performed by central processing unit (CPU).

5. **Data Manipulation**: Information Technology manipulates data and creates new information from the existing information. This is done by summarizing, re-arranging, reforming, or various types of calculations. This is achieved using various softwares available.

6. **Data Retrieval**: Data retrieval is the process of finding out the needed information which may be used by a user. Data retrieval is performed by magnetic tape, floppy disc, hard disc, CD-ROM, flash memory etc.

7. **Data Display**: Data display involves presenting of information to the user in the form which he likes. Display can be in the form of a text, graphic audio and video. For this purpose, different types of printers, such as dot-matrix, inkjet, laser etc. can be used. Besides display may be through computer screen and speakers also.

Impact of Information Technology on Organizations

Information Technology affects an organization but various researchers have differing opinion on how this process takes place. Some researchers base their work on economics, while others take a behavioural approach. Thus two types of theories – economic and behavioural – have emerged to explain the impact of information technology on organization. Both these types of theories explain this phenomenon differently.

Impact of Organization on Information Technology

Organization-information technology relationship is a two-way traffic. In one way, information technology has impact on organization; in another way organization also has impact on information technology through the process of deciding the adoption of a particular technology. The organization designs and operates its information systems with the help of information technology.

While deciding the adoption of a particular information technology, the organization takes into account the following issues:

1. Decisions about the role of information technology
2. Performance parameters of information technology
3. Decisions about information technology packages

Role of Information Technology

Information technology has affected every walk of human life. Since an organization is a collection of people to achieve certain objectives through their collective efforts, it cannot remain aloof from the impact of information technology developments. In fact, most of the forward-looking organizations use information technology as a source of developing competitive advantage because through information technology, the organizations can perform many functions in lesser time and at lesser cost.

1. **Organizational Efficiency and Effectiveness:** It is possible to use information technology for achieving organizational efficiency and effectiveness. Organizational efficiency refers to the cost/benefit rate incurred in the pursuit of organizational objectives while organizational effectiveness is the degree to which these objectives are achieved.

2. **Organizational Transformation:** Information technology may be used for organizational transformation. Transformation is the process of changing an object in another form. Thus, organizational transformation refers to bring fundamental change in the organization. Such a change may be in the form of nature of business, organizational objectives, and operational processes.

3. **Strategy Formation:** Information technology can be used in strategy formation. Strategy is a way in which an organization, reacting to its environment, deploys its principal resources and marshals its main efforts in pursuit of its objectives. In making strategic decisions, strategists try to create a unique and valued position involving different set of activities with the result that a strategically positioned

organization performs different activities than those from its rivals or performs similar activities in different ways.

4. **Strategic Alliance Formation:** Information technology helps in forming strategic alliance among two or more organizations. Strategic alliance is a form of combining the efforts of two or more partners joins hands together for achieving certain specified objectives generally for certain specified period.

As a whole, IT deals with information. The volume of releveant information around us is huge. Rather we can say we live in a world which is submerged in an ocean of information which are being gathered from numerous activities taking place all over the world. Acquiring the information, processing, accessing and interpreting it are the key issues dealt with technology.

Information

Dr. Janardan Jha in MITE's Management Information System defines information as the data which is organized and presented so that the decision maker may take the necessary action. Information requirements of decision makers can be classified into three types:

1. **Environmental Information**: This includes four types of information related to

   I. Government Policies

   II. Economic Trends

   III. Technological Environment

   IV. Factors of Production

2. **Competitive Information**: This includes three types of information related to

   I. Industry Demand

   II. Firm Demand

   III. Competition

a) Past Performance

b) Present Activity

c) Future Plans

3. **Internal Information:** This includes four types of information related to

I. Sales forecasts

II. Financial Plan

III. Supply Factors

IV. Policies

Characterstics Features of Information

Information has following characterstic features

1) Relevance

2) Availability

3) Timeliness

4) Objectivity

5) Sensitivity

6) Comparability

7) Completeness

The quality of an information is measured in terms of:

1) Accuracy

2) Form

3) Relevance

Management Information System (MIS)

Dr. Janardan Jha in MITE's Management Information System defines MIS as computer-based system that provides managers with the tools for organizing, evaluating and efficiently running their departments. In order to provide past, present and prediction information, an MIS can include *software* that helps in decision making, data resources such as *databases*,

the *hardware* resources of a system, *decision support systems*, people management and *project management applications*, and any computerized processes that enable the department to run efficiently.

It can be defined as a system that:

1. Provides information to support managerial functions like planning, organizing, directing, controlling;
2. Collects information in a systematic and a routine manner which is in accordance with a well defined set of rule and
3. Includes files, hardware, software and operations research models of processing, storing, retrieving and transmitting information to the users.

Objectives of MIS

The objectives of Management Information System are as follows:

1. To facilitate the decision-making process by furnishing information in the proper time frame;
2. To provide requisite information at each level of management to carry out their functions;
3. To help in highlighting the critical factors to the closely monitored functioning of organizations;
4. To support decision-making in both structured and unstructured problem environments and
5. To provide a system of people, computers, procedures, interactive query facilities, and documents for collecting, storing, retrieving and transmitting information to users.

Characteristics of MIS

MIS has four major characteristics. They are as follows

1. It is Management oriented
2. It is management directed
3. It leads to integration of information of all information.
4. Follows common data flows

Types of Information Systems

Information systems are classified differently by different experts. However, there are four major information systems which are in common use. A brief description of each of these follows.

1. Knowledge-based Systems

Knowledge-based systems include artificial intelligence, expert systems, neural network, robotics etc.

2. Expert Systems

An Expert System (ES) is a computer application that guides the performance of ill structured tasks, which usually requires experience and expertise. Using an ES, a non-expert can achieve performance, which is comparable to an expert's performance in that particular domain.

An expert system is very similar to a decision support system. that is; both are intended to provide a high level of problem solving support to their users. But they differ in two major ways:

I. A DSS consists of routines that reflect as to how a manager believes a problem should be solved, as well as the managers' style and capabilities. An expert system on the other hand offers an opportunity to make decisions that exceed the managers' capabilities.

II. Ability of ES to explain its line of reasoning in reaching a particular solution. Very often the explanation of how a solution was reached is more valuable than the solution itself.

Components of Experts System include; User interface, Knowledge base, Inference Engine and Development Engine

3. Decision Support Systems

The term, DSS refers to a class of systems, which supports the process of decision making. The emphasis is on support rather than automation of decisions. DSS allows the decision maker to retrieve data and test alternative solutions during the process of problem solving.

DSS has following Characteristics:

1) It helps the decision maker in decision-making process;
2) It is designed to solve semi-structured and unstructured problems;
3) It supports decision makers at all levels, but is most effective at the tactical an strategic levels;
4) It makes general-purpose models, simulation capabilities and other analytical tools available to the decision maker;
5) It is an interactive, user-friendly system that can be used by the decision maker with little or no assistance from MIS professionals;
6) It can be readily adapted to meet the information requirements for any decision environment;
7) It provides the mechanisms to enable a rapid response to decision-makers request for information;
8) It has the capability to interface with the corporate database;
9) It is not executed in accordance with pre-established production schedule;
10) It is flexible enough to accommodate a variety of management styles and
11) It facilitates communication between levels of decision-making.

Types of DSS:

Decision Support System can be classified into following five types

1) Status Enquiry System
2) Data Analysis Systems
3) Information Analysis Systems
4) Accounting Systems
5) Model Based Systems

4. Database Management System

A database is a collection of logically related data that are organized in such a way so as to facilitate easy accessing and processing of data. Databases contain data, not information. By itself databases are meaningless and worthless, but through proper design and use of the databases, it can be an essential tool for producing information for making management decisions.

DBMS has three components namely

1) Data Dictionary System
2) Data definition Language
3) Data Manipulation Language.

Basic Technological Terms used in Information Technology

In the following paragraphs the researcher briefly outlines some of the important terms used the Information Technology. As available on the Website Softweb 2001, the terms and their description follow:

1. Internet

The internet is made up of millions of computers linked together around the world in such a way that information can be sent from any computer to any other 24 hours a day. These computers can be in homes, schools, universities, government departments, or business houses small and large. These computers can be single personal computers or workstations on a school or a company network. The Internet is often described as *a network of network* because all the smaller networks of organizations are linked together into the one giant network called the Internet. All computers are pretty much equal once connected to the internet, the only difference will be the speed of the connection which is dependent on Internet Service Provider and modem.

2. Internet & World Wide Web

Sometimes people use the words Internet and World Wide Web (WWW) synonymously but they are different. The WWW is a component of the Internet that presents information in a graphical interface. We can think of

the WWW as the illustrated version of the Internet. It began in the late 1980's when physicist Dr. Berners-Lee wrote a small computer program for his own personal use. This program allowed pages, within his computer, to be linked together using keywords. It soon became possible to link documents in different computers, as long as they were connected to the Internet. The document formatting language used to link documents is called HTML (Hypertext Markup Language).

The Web remained primarily text based until 1992. Two events occurred that year that forever changed the way the Web looked. Marc Andreesen developed a new computer program called the NCSA Mosaic, which is the first *Web browser.*

3. TCP/IP

TCP/IP is a communications protocol used to transfer digital data around the Internet. TCP and IP were developed by a Department of Defence (DOD) research project to connect different networks designed by different vendors into a network of *networks the Internet,* TCP/IP is often referred to as the *internet protocol.* As with all communications protocols, TCP/IP is composed of layers:

IP is responsible for moving packet of data from node to node. IP forwards each packet based on a four byte destination address (the IP number). The Internet authorities assign ranges of numbers to different organizations. The organizations assign groups of their numbers to departments. IP operates on gateway machines that move data from department to organization to region and then around the world.

TCP is responsible for verifying the correct delivery of data from client to server. Data can be lost in the intermediate network. TCP adds support to detect errors or lost data and to trigger retransmission until the data is correctly and completely received.

4. Sockets

A socket is a name given to the package of subroutines that provide access to TCP/IP on most systems.

5. **Internet Chat**

Chatting is one of the most popular activities on the Internet and involves people from all walks of life and just about all ages to coming together in areas where they can join in on in a variety of topics that they are interested in with people all around the world. Traditionally chat is text based but can also involve audio and video

6. **Video Conferencing**

Video conferencing involves the visual communication of parties around the world. You can use Video conferencing to link up with specific parties or you can join Video conferencing communities that operate in the same way *Internet Chat* does.

7. **Newsgroups**

Newsgroups (also called Usenet), work something like SOFWeb's electronic discussion lists, but rather than the discussions being hosted on SOFWeb, they are held on your Internet Service Provider's server. Most newsgroups are open to anyone to read or post to, and unlike e-mail discussion lists, or SOFWeb's discussion lists, one does not need to register to use them. In order to read them the user will need newsreader software, such as the one provided with Netscape Navigator. To be able to access the newsgroups the user will need to ask ISP for the correct information.

8. **Discussion Groups**

Discussion groups are like electronic bulletin boards, people can leave messages, ask questions, or share ideas, and others can respond to them. The advantage of these is that one does not need his own e-mail address, just access to the Web. There are a large number of discussions on SOFWeb that cover a large number of topics and areas.

9. **Intranet**

An Intranet is a network based on the Internet TCP/IP open standard. An intranet belongs to an organization, and is designed to be accessible only by the organization's members, employees, or others with authorization. An intranet's Web site looks and act just like other Web sites, but has a firewall

surrounding it to fend off unauthorized users. Intranets are used to share information. Secure intranets are much less expensive to build and manage than private, proprietary-standard networks.

The surprising speed by which intranets has grown among corporate users demonstrates the strength of the Internet networking. Several surveys contend that corporate intranet expenditure far out-paces the level of spending on consumer-oriented Web businesses (Web stores).

The compatibility of corporate intranets with the Internet will be a significant factor in the digital economy. In a sense, producer and seller information is readily accessible by outsiders, making it easy to manage and disseminate information to consumers.

10. Extranet

Extranet refers to a group of websites, belonging to independent entities that are combined together in order to share information. This is in contrast to an intranet, which is a private site that is only accessible for employees of an entity. Extranets are used in the supply chains to allow for more effective communications along the supply chain. They are replacing proprietary standard networks that are considerably more expensive to establish, and therefore were only used by large organizations.

Contemporary Applications of Information Technology

Professor L.M. Prasad & Usha Prasad elaborate the application of information technology in the present day business world. In the following pages the researcher rewrites the contemporary applications of information technology as describe by them. Information technology (IT) is playing crucial role in contemporary society. It has transformed the whole world into a global village. In fact, we are living in a global village (village taken in a wider sense and not in the sense of village in relation to city; it may be called as global information society) with a global economy which is increasingly dependent on the creative management and distribution of information. These applications are in the following areas:

1. Electronic mail.

2. Electronic commerce:

    I. Electronic product/service trading

    II. Electronic share trading

    III. Electronic banking

    IV. Electronic governance

    V. Electronic data interchange

3. On-line information services.

4. Multimedia.

Electronic Mail

Electronic mail (e-mail) is a fast and efficient method to exchange messages between two or more persons. E-mail can be defined as the exchange of messages through a computer network. Messages can be entered via the keyboard or can be taken from files stored on a disk. In general, e-mail takes the form of a text with little formatting, though more sophisticated e-mail software packages can allow users to send messages that contain different typefaces, graphics, and other elements that enhance the quality of presentation of the messages.

Architecture of E-mail

Architecture of e-mail defines the subsystems of e-mail and explains its organization. There are normally two subsystems in e-mail. Namely user agents and message transfer agents. Common terms used in e-mails are explained as hereunder:

1 **Composition:** Composition refers to the process of creating messages and answers. Although any text editor can be used for the body of the message, the e-mail system itself can provide assistance with addressing and the numerous header fields attached to each message.

2. **Transfer:** Transfer refers to moving messages from the sender to the receiver. This requires establishing the connection to the destination or some intermediate machine, outputting the message, and releasing the connection.

3. **Reporting:** Reporting involves communicating the sender of the message about what happened to the message — has it been delivered, rejected, or lost. Thus, reporting is a kind of feedback about the state of the message.

4. **Displaying:** In displaying, the incoming message is displayed so that the receiver can read the message. Sometimes, conversion is required or a special viewer must be invoked, particularly when the message is in the form of a postscript file.

5. **Disposition:** Disposition is the final step and is concerned with what the receiver does with the message after receiving it. There can be several alternatives for this throwing the message without reading, throwing it after reading, saving it for further reading, forwarding it to another person, or processing it in other ways, depending on the situation.

Advantages of E-mail

Use of e-mail offers following advantages:

1. **Speed:** The main advantage of e-mail is that messages can be transmitted very quickly. Practically, there is almost no time gap between transmitting a message and its receipt through Internet.

2. **Auditing:** Even the simple e-mail system provides a number of features that allow users to audit their message. It allows users to format copy of the message, giving date and time of transmission of the messages, and giving a receipt whether the particular message has been received at the destination.

3. **Multimedia:** Multimedia combines various media of communication, such as text and graphics. The combination of such media in a message makes it more understandable and impressive.

4. **Multiple Gopies:** E-mail facilitates to communicate with many persons simultaneously. When a particular message is to be sent to numerous persons, it is not necessary to send the message to each person individually, but mailing list containing the e-mail addresses of all such persons is used for this purpose.

5. **Data Sharing:** E-mail messages can be used to transmit data files to other persons. All types of data including word processor files, spreadsheets, and database files can be sent through this way.

6. **Flexibility:** E-mail system provides flexibility in the sense that hardware and software being used for e-mail can be used for other purposes too.

7. **Lower Cost:** E-mail has lower cost as compared to similar speedy communication devices like telephone. Hundreds of messages can be sent and received at the cost of a brief telephone call.

Problems with E-mail

User of e-mail faces problems while using it. Common problems faced while using e-mail are:

1. **Security Problem:** Messages sent through e-mail are not completely secure because the messages sent through e-mail seldom take the most direct route. Rather, these messages pass through a number of places before reaching to the final destinations.

2. **Technical Problem:** Sending or receiving messages through e-mail requires some technical knowledge about e-mail hardware and software. Therefore, novice users cannot send or receive messages through e-mail.

3. **Spamming Problem:** Spamming is the act of sending unwanted messages like advertisements etc. to e-mail users. Such mails are often called junk mails.

4. **Investment in Hardware and Software:** Use of e-mail is possible only with compatible e-mail hardware and software. Investment in these devices is a costly affair.

Electronic Commerce

Electronic commerce (e-commerce) has emerged as an important application of information technology in the contemporary society. This involves performing commercial operations electronically. In a usual commercial operation, buyers and sellers come in contact with each other

either physically or through other means of communication and rest of the buying/ selling procedure is performed in physical sense.

Commerce refers to all the forms of transactions related to commercial activities, including both organisations and individuals, that are based upon the processing and transmission of digitized data, including text, sound. and visual images.

Applications of E-commerce

E-commerce has following four types of applications:

1. **Business to Business:** Business to business, commonly known as B2B, involves electronic transactions for business activity between two or more business organisations.
2. **Business to Consumer:** Business to consumer, commonly known as B2C, involves bringing business and consumers closer to each other and creating a unique marketplace where products and services can be bought and sold.
3. **Business to Government:** Business to government, known as B2G, involves dealing with government agencies like forex clearances, customs, excise duties electronically.
4. **Consumer to Administration:** Consumer to administration, known as C2A, involves providing relevant information to people by government administrative agencies

Forms of E-Commerce

The following forms of e-commerce have become quite popular:

1. Electronic Product/Service Trading

In a restricted sense, e-commerce includes only buying/selling of products and services. Taking this view, we have used the term e-commerce in this section to denote trading of products and services electronically. A brief explanation of terms used is electronic products/service trading follows

a) **Seller:** Seller is a person/organisation which offers products/services to some other party which is willing to buy these. Products may be of any

type though at present only some standardised products are available through e-commerce.

b) **Seller Website:** For operating e-commerce, the seller must design a website provides information to customers and accepts order from them. The information contained in website is about products/services being offered, their price, mode of shipment, mode of payment, and other relevant terms and conditions"

c) **Customer:** Customer is a person/organisation which makes use of e-commerce for buying products/services. After receiving the information from various websites, a customer analyses it to arrive at a decision from which seller he would buy.

d) **Shipment:** Product/service shipment may either take physical form or electronic form. In physical form which is used for shipment of a moveable physical object, the seller delivers the products through a mode of transport mutually agreed between seller and customer

e) **Payment:** The most practised mode of payment in e-commerce is credit card. Payment through a credit card involves a number of intermediaries —' seller's bank, customer's bank, card issuer and its bank

Benefits of Electronic Product / Service Trading

Use of Electronic Product/Service Trading offers following benefits

a) **Wide Market Area:** E-commerce creates a wide market area because of lack of physical limitations. In fact, through e-commerce, a seller can reach the whole population of the world.

b) **Ease of Operation:** E-commerce provides easy operation of selling/ buying. This helps both sellers and customers. Since transaction is done on-line, placing of an order can be completed within seconds.

c) **Lower Transaction Costs:** E-commerce lowers transaction costs as it saves costs of paper work—drafting and typing order, sending order through postal mail, etc. From the seller's side, costs are saved by eliminating paper work.

d) **Lower Inventory Requirement:** Since e-commerce centralizes Distribution channel and eliminates many intermediaries in the distribution process, volume of finished product inventory required is reduced considerably.

e) **Shopping from Home/Workplace:** E-commerce provides facility to customers to shop from their home or workplace. This is possible because e-commerce does not require physical contact between sellers and customers

f) **Increased Seller-customer Interaction:** E-commerce allows sellers and customers to interact more freely.

Problems with Electronic Product/Service Trading

While using Electronic Product/Service Trading user faces following problems

a) **Technological Problem:** E-commerce requires lot of enabling technologies if support different operations starting from order placing to payment

b) **Lack of Verification of Product Quality:** There are many products 'whose quality can be assessed by physical inspection and functional demonstration and not just through electronic display.

c) **Legal Problem:** E-commerce does not have support of legal framework as yet.

2. Electronic Share Trading

Share trading is a quite old practice but electronic share trading is comparatively a new practice. In India, electronic share trading was introduced by National Stock Exchange in 1994. Besides the shares, debentures and bonds are also traded though their volume is very thin. In a stock exchange, shares of only those companies are traded which are listed in the concerned stock exchange. A physical share trading involves the following activities:

a) Choosing a broker by an investor to buy/sell shares on his behalf.

b) Placing order to buy/sell shares of a particular company either by prescribing a price limit or at prevailing market price.

c) Executing order by the broker in the share trading hall (commonly known as ring); issuing contract note to the investor.

d) Settlement of all transactions weekly or bi-weekly by the concerned stock exchange.

e) Taking deliveries of share certificates along with filled-in transfer forms from brokers.

f) Collecting payments from buying brokers.

g) Giving deliveries to buying brokers and making payment to selling brokers.

h) Settlement of accounts of investors by brokers.

3. Benefits of Electronic Share Trading

There are several benefits of electronic share trading which are as follows:

a) **Wide Area Coverage:** Through electronic share trading, wide area can be covered. In fact NSE has been able to provide share trading terminals in smaller cities

b) **Speedy Transaction and Settlement:** Electronic share trading has facilitated speedy transactions and their settlement. With the result, an Investor who sells his shares can receive payment within a week.

c) **Reduced Transaction Costs:** Electronic share trading has reduced transaction costs considerably. Instead of talking to a broker located in a city having a stock exchange, the investor can call a broker or sub-broker located in his own city.

d) **Transparent Transactions:** Electronic share trading has brought transparency in transactions which have resulted into better investor-broker relationship. In the present era, transparency is a critical problem as the investors wants to verify the rates at which transaction is done actually.

e) **Lower Paper Work:** Electronic share trading has reduced paper work almost to nil both at a broker's end as well as at an investor's end. At broker's end, lot of paper work was involved in physical trading era, such as preparing contract notes manually, keeping records of various transactions—client-wide as well as company-wise and preparing details of shares to be delivered to the stock exchange.

f) **Elimination of Bad deliveries:** A bad delivery is one which does not have the required information filled in the transfer forms attached with share certificates. A transfer form must have the same signature of an investor which has been in the record of the company concerned.

4. Electronic Banking

Electronic banking involves providing banking services to customers electronically. These banking services are primarily classified into two broad categories.

a) **On-line Banking:** On-line banking means a customer can withdraw amount from his account without writing a cheque or any other means of withdrawal involving paper work. Earlier, customers had to conduct their banking transactions within the restricted time frame of banking.

b) **Electronic Funds Transfer**: Electronic funds transfer (EFT) involves transmission of financing transactions (debit or credit) between banks, and other organisations, and banks and customers.

5. Electronic Governance

Electronic governance (e-governance) involves enhancing relationships between government to government, government to citizens, government to private sector and non-government organizations and vice-versa.

6. Electronic Data Interchange

Electronic data interchange (EDI) is the inter-company computer-to-computer communication of data in a machine-readable, structured format. This communication enables the data to be transmitted and received. Typically, an EDI is an information system that links a company with which it

has some kind of transaction relationships, such as customers, suppliers, banks, etc

Requirements of Electronic Data Interchange

Electronic Data Interchange has following requirements

a) **Inter-company Communication Capability:** Since EDI is a mechanism of inter-company computer-to-computer communication, in order to be effective, it requires that both the parties—sender and receiver—have a modem that enables their computers to communicate through telephone lines.

b) **EDI Translator Software:** EDI requires translator software to convert incoming and outgoing messages into a form comprehensible to other companies. EDI translator can be placed either on mainframe or microcomputer. Though microcomputer configuration is the least expensive, it is very slow as compared to mainframe configuration.

c) **Application Link Software:** Application link software functions differently "at two sides—sending side and receiving side. At the sending side, the major task is to determine the data requirements of the EDI standard and collection of data to satisfy those requirements.

d) **Standardisation:** Standardisation in EDI is required so that all the participating organisations use formats which are mutually compatible, so that data are exchanged without any problem.

On-line Information Services

Our contemporary society has become information society in which people try to have as much information as possible while sitting at home. This has become possible because of the provision of on-line information services. These on-line Information services may provide information of any kind. On line information services are provided through websites (Webs). There are three ways in which information can be found on websites. They are

a) **Searching:** In searching, the user knows exactly what information he needs and can search it on the Web. Consider an analogy of searching a book from a library.

b) **Browsing:** Browsing is the process of skimming an information resource on the Internet, such as Usenet, gopher space or Web. Browsing is required when the user is not fully aware about his information needs but he has only an idea of what he wants.

c) **Surfing:** Surfing is a kind of browsing but in surfing, the user does not look for specific information. He goes on surfing to find out whether any information is available which may be relevant to him.

Search Engine

To find out information on the Internet, the user needs to use a search engine. A search engine is a software that enables the user to search for Internet resources. Such an engine is accessed through Internet browser software. Search engines can be classified into:

a) **Subject Directories:** Search engines that are subject directories of information resources classify subjects according to broad categories and multiple levels of subcategories.

b) **Web Databases:**. Web databases are built by software that travels over the Web to look for the subjects and information that can be downloaded Into a database automatically.

Multimedia

Multimedia is a form of communication that combines two or more types of media together, such as text, graphics, sound, full motion video, still video, or animation into a computer-based application.

Multimedia systems combine the elements of today's microcomputers with two additional elements—audio (sound) and video (picture). For multimedia applications, specially configured systems are required. Software required for multimedia systems includes painting and drawing tools, computer-aided design tools, Image editing tools, optical character recognition device, sound editing programs, and digital video movies.

Multimedia Applications

Multimedia applications will be the foundation of new consumer products and services, such as electronic books and newspapers, electronic class room presentation technologies, full motion videoconferencing, imaging, graphics design tools, voice mail, video mail etc.. In business, multimedia have following applications:

a) **Better Information Presentation for Decision Making:** Multimedia presents Information in such a way that it becomes easily understandable and usable for managers to make decisions. Instead of presenting Information in the form of complex and lengthy tables along with associated text, It can be presented in the form of analytical graphs.

b) **Computer-aided Design:** Multimedia helps in creating computer-aided design (CAD) which is used for new product/machine development. In CAD, software is used to create architectural drawings, product designs, landscaping plans, and engineering drawings.

c) **Advertising and Sales Promotion:** Multimedia helps in executing 'advertising and sales promotion in a much better and effective way. Advertising is a non-personal presentation and promotion of products and services. Sales promotion consists of incentive tools designed to stimulate quicker purchase of a product or service.

d) **After Sales Service:** Multimedia helps in providing after sales service more quickly and effectively. There are many products which require after sales service, such as plant, machinery, etc. When vendors supply such products to customers, they own the responsibility of providing after sales service.

e) **Employee Training:** Multimedia has become almost necessary in employee training in the present world. With the rapid technological change, employees need training on continuous basis in order to avoid their skills being obsolete.

f) **Project Collaboration:** Multimedia helps In entering project collaboration. Project collaboration has become an effective tool for developing competitive advantage. In the present complex business environment, in many cases, a single organisation is not able to handle a complex project on its own because of its limited competence. In order to overcome this limitation, the organisation can join hands with another organisation having complementary competence necessary for project execution.

The basic realism about IT has been comprehended as:

A collection of data is not necessarily information

A collection of information is not necessarily knowledge

A collection of knowledge is not necessarily wisdom

A collection of wisdom is not necessarily truth

Eric Hoffer (1902-1983)

CHAPTER - ONE

CONCEPTUAL FRAMEWORK

SECTION - TWO

MARKETING

CHAPTER - ONE

CONCEPTUAL FRAMEWORK

SECTION - TWO

MARKETING

In this section the researcher provides an outline description of management and marketing as one of the functional areas of management, marketing concepts, marketing mix and promotion mix.

Management

Prof. L.M. Prasad says that one of the most important human activities is managing. Management is the integrating force in all organised activity. Whenever, two or more people work together to attain a common objective, they have to co-ordinate their activity. They also have to organise and utilize their resources in such a way as to optimise the results. Thus, management is not unique to business organisation but common to all kinds of social organisation. Management is most vital for the successful performance of all kinds of organised social activities.

The emergence of management in our times may be regarded as a significant development as the advancement of modern technology.

Management Functions and Functional Areas of Management

Management functions and organisational functions are different. According to Prof. L.M. Prasad, management process suggests that all the managers in the organisation perform certain functions to get the things done by others. The list of management function varies from author to author with member of functions ranging from three to eight. The management process comprises the following six fundamental function - planning, organising, staffing, directing, co-ordinating and controlling. One useful classification of managerial functions has been given by Luther Gulick who abbreviated them in the word POSDCORB. Budgeting is also not an independent management function but an integral part of planning and control function. However, most of the management thinkers believe that there are five non-

overlapping functions of management. A brief discussion is given about each function.

(1) *Planning* is the conscious determination of future course of action to achieve the desired results. This includes what one wants to achieve, when to achieve, and how to achieve.

(2) *Organising* is the process of dividing work into convenient tasks or duties, grouping of such duties in the form of positions, grouping of various positions, and delegating authority to each position. so that the work is carried out as planned.

(3) *Staffing* involves managing the various positions created by the organising process. It includes preparing inventory of personnel available and identifying the gap between manpower required and available, identifying the sources from where people will be selected, selecting people, training and developing them, fixing financial compensation, appraising them periodically, etc.

(4) *Directing* includes communicating, motivating and leading the sub-ordinates about their expected behaviour.

(5) *Controlling* involves identification of actual results, comparison of actual results with expected results as set by planning process, identification of deviation between the two, if any and taking of corrective action so that actual results match with expected results.

On the other hand, Organisational functions organisational functions are production, marketing, finance and personnel etc. Organisational functions differ from organisation differ from organisation to organisation depending upon their nature, while the functions of the managers are common to all. Thus, a manager may be put in production function, marketing or finance functions but he completes the activities of these functions through all the managerial functions. These organisational functions are called functional areas of management.

The number and types of functional areas of management are determined by the nature of the organisation and the types of classifications of various

activities. A more acceptable and practical classification includes four broad functional areas - Production, Marketing, Finance and Human Resources. These areas have their own organisation, polices, procedures, and sub activities. A brief discussion is given about each functional area.

(1) **Production:** This area is normally kept under the control of a production manager who is responsible for the performance of entire related activities. This area may further be classified into major sub areas like, Purchasing, Materials Management, Research and Development etc..

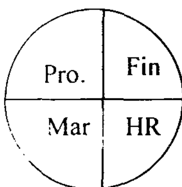
(2) **Finance:** This area deals with the record-keeping of various transactions and management of financial resources. It may be further classified into sub-areas like, Financial Accounting, Management Accounting, Costing, Investment Management, Taxation etc.

(3) **Human Resources:** This aspect deals with the management of human beings of the organisation. It includes following areas like Recruitment and Selection, Training and Development, Wage and Salary Administration, Industrial Relations etc..

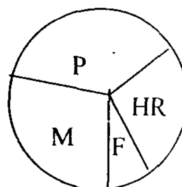
(4) **Marketing :** This area involves the distribution of product to the buyer. This requires a number of steps and can be divided into following sub areas, like. Product, price, place(distribution) and promotion.

The classification of the above functional areas does not necessarily support that an organisation divisionalised on the functional basis will have all these departments. This, however, is determined by the specific need of the organisation. Kotler has illustrated the Position of marketing vis-à-vis other functional areas is shown in the Diagram-1.

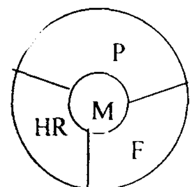
(a) Marketing as an equal function



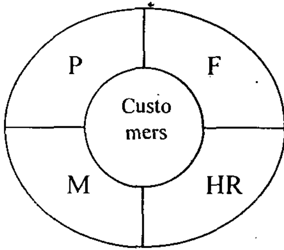
(b) Marketing a more important function



(c) Marketing a major function



(d) Customer as the controlling function



(e) The customer as the controlling function and as the integrative function

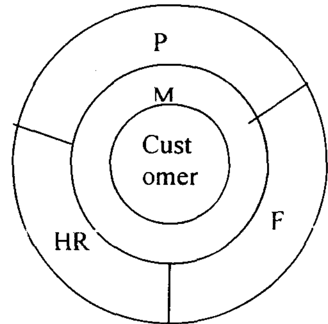


Diagram 1: The Position of Marketing Management

Marketing Concept

According to Philip Kotler marketing is the organization function charged with defining customer targets and the best way to satisfy their needs and wants competitively and profitably. Because consumers and business buyers face an abundance of suppliers seeking to satisfy their every need, companies and not-for-profit organizations cannot survive today by simply doing a good job. They must do an excellent job if they are to remain in the increasingly competitive global marketplace.

Many studies have demonstrated that the key to profitable performance is knowing and satisfying target customers with competitively superior offers. This process takes place today in an increasingly global, technical, and competitive environment.

Marketing has its origins in the fact that humans have needs and wants. Needs and wants create a state of discomfort in people, relieved through acquiring products to satisfy these needs and wants. Because many products can satisfy a given need, product choice is guided by the concepts of value, cost, and satisfaction. These products are obtainable in several ways: self-production, coercion, begging, and exchange. Most modern societies work on the principle of exchange, which means that people

specialize in producing particular products and trade them for the other things they need. They engage in transactions and relationship building.

A market is a group of people who share a similar need. Marketing encompasses those activities that represent working with markets and attempting to actualize potential exchanges.

Marketing management is the conscious effort to achieve desired exchange outcomes with target markets. The marketer's basic skill lies in influencing the level, timing, and composition of demand for a product, service, organization, place, person, idea or some form of information

Interest in marketing is intensifying as more organizations in the business sector, the nonprofit sector, and the global sector recognize how marketing contributes to improved performance in the marketplace. The result is that marketers are re-evaluating various marketing concepts and tools that focus on relationships, databases, communications, and channels of distribution, as well as marketing outside and inside the organization

Philip Kotler says, marketing is typically seen as the task of creating, promoting and delivering goods and services to consumers and business. Marketers are skilled in stimulating demand for a company's products. Marketers are responsible for demand management. Marketing managers seek to influence the level, timing and composition of demand to meet the organisations objectives. Eight different states of demand are negative demand, no-demand, latent demand, declining demand, irregular demand, full demand, over full demand and unwholesome demand.

Market

Philip Kotler defines market as consisting of all the potential customers sharing a particular need or want, who might be willing and able to engage in exchange to satisfy that need or want. Thus, a market is a group of buyers and sellers interested in negotiating the avenues of purchase or sale of goods or services. There are three concepts of market. One, the *place concept,* holds that a market is a convenient meeting place for buyers and sellers together in order to conduct buying and selling activities. Two, The *area concept*, holds that market is an area where exchange takes place and

three. The *demand concept* holds that market represents total customer demand.

Marketing Defined

The American Marketing Association offers the following definition "Marketing management is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods, services to create exchanging that satisfy individual and organisational goods."

Institute of Marketing, England defines "Marketing management is the creative management function which promotes trade and employment by assessing consumer needs and initiating research development to meet them. It co-ordinates the resources of production and distribution of goods and services, determine and directs the nature and feels of the total efforts required to sell profitably by maximum production to the ultimate user."

Thereby, the marketing management is the functional area of business management which has to do with the broad problems of consumer's satisfaction. According to the modern concept of marketing, the marketing is one which start with an interpretation of consumers needs and designs, both qualitatively and quantitatively, follows through with all the business activities involved in the flow of goods and services necessary to aid to customer in getting the expected utility from the products he has purchased.

Simple Marketing System

Simple Marketing System can be illustrated as shown in Diagram-2 given below:

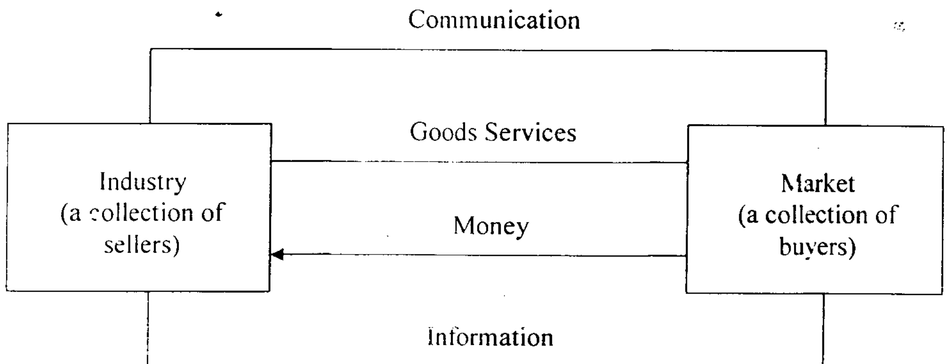


Diagram 2: Simple Marketing System

Core Marketing Concepts

Marketing can be further understood by defining its core concepts. We shall mainly depend on the explanation given by Philip Kotler.

1. **Target Markets and Segmentation**
   a) Every product or service contains features that a marketer must translate into benefits for a target market
   b) The consumer perceives these benefits to be available in a product and directly impacts the perceived ability to meet the consumer need(s) or want(s)
2. **Marketers and Prospects**
   a) A marketer is someone actively seeking one or more prospects for an exchange of values
   b) A prospect has been identified as willing and ability to engage in the exchange
3. **Needs, Wants, and Demands**
   a) To need is to be in a state of felt deprivation of some basic satisfaction
   b) Wants are desires for specific satisfiers of needs
   c) Demands are wants for specific products that are backed by an ability and willingness to buy them.
4. **Product or Offering**
   a) A product is anything offered for sale that satisfies a need or want.
   b) Marketers are involved in marketing 10 types of products, namely goods, services, experiences, events, persons, places, properties, organisations, information and ideas
   c) The physical products, that is goods, are classified as manufactured goods, agricultural goods and natural raw materials. These can further be classified into consumer and industrial goods. Prof. M. T. Copeland classifies consumer goods on the basis of buying habits as convenience goods, shopping goods and specialty goods.

5. **Value, Satisfaction and Quality**

a) Value is the consumer's estimate of the product's overall capacity to satisfy his or her needs

b) Value is a ratio of benefits, that is, what the customer gets to costs, that is, what he gives

$$\text{Value} = \frac{\text{Benefit}}{\text{Costs}} = \frac{\text{Functional benefits + Emotional benefits}}{\text{Monetary costs + Time Costs + Energy Costs + Psychic costs}}$$

c) Satisfaction is the extent to which products' perceived performance matches buyers' expectations. If the products' performance falls short of expectations the buyer is dissatisfied. If performance matches or exceeds expectations the buyer is satisfied or delighted.

d) Quality is defined as the totality of features and characteristics of a product or services that bear or its ability to satisfy stated or implied needs. Quality may be of two types, namely, performance quality and conformance quality. Performance quality refers to the level at which a product performs its function. Whereas conformance quality refers to freedom from defects and the consistency with which a product delivers a specified level of performance.

6. **Exchange, Transactions and Transfer**

a) Exchange means obtaining a desired product by offering something desirable in return. Five conditions must be satisfied

(1) There are at least two parties

(2) Each party has something that might be of value to the other party

(3) Each party is capable of communication and delivery.

(4) Each party is free to accept or reject the offer.

(5) Each party believes it is appropriate or desirable to deal with the other party.

b) A transaction is the trade of values between two parties that is, we must be able to say A gave X to B and received Y in return. Transaction involves four conditions to be satisfied

(1) At least two things of value
(2) Agreed upon conditions
(3) Time of agreement
(4) Place of agreement

c) A transfer is a situation when A gives X to B but does not receive anything tangible in return e.g., gift, subsidy, charitable contribution etc.

7. **Relationships and Networks**

a) Relationship marketing is the process of creating, marinating and enhancing strong, value-laden relationships with customers and other stakeholders.

b) Transaction marketing is a part of the larger idea of relationship marketing.

c) The ultimate outcome of relationship marketing is a unique company asset called a marketing network of mutually profitable business relationships

8. **Marketing Channels**

a) To reach a target market, the marketer use three kinds of marketing channels viz. *Communication channels*, *distribution channels*, and *trade channel* or *selling channels*. Marketers clearly face a design problem in choosing

b) The marketer must decide the best mix of communication, distribution and selling channels for their offerings or products.

9. **Supply Chain**

a) The supply chain describes the long channel process that reaches from the raw materials and components to the final product/buyers

b) It is perceived as a value delivery system

10. **Competition**

a) Competition includes actual and potential rival offerings and substitutes

b) A broad view of competition assists the marketer to recognize the levels of competition based on substitutability: brand, industry, form, and generic

11. **Marketing Environment**

a) The marketing environment consists of the task environment and the broad environment.

b) The task environment includes the immediate action involved in producing, distributing, and promoting the offering.

c) The broad environment consists of six components, namely Demographic, Economic, Natural, Technological, Politico-legal and Socio-cultural environments.

Company Orientations Towards the Market Place:

There are five competing concepts under which organizations conduct their marketing activities.

1. **The Production Concept:** The production concept is one of the oldest concepts in business. The production concept holds that consumers will prefer products that are widely available and inexpensive.

2. **The Product Concept:** The product concept holds that consumers will favour that product that offers the most quality, performance, or innovative features.

3. **The Selling Concept:** The selling concept holds that consumers and businesses, if left alone, will ordinarily not buy enough of the organisations products. The organisation must therefore, undertake an aggressive selling and promotion effort. This concept assumes that consumers typically show buying inertia or resistance and must be coaxed into buying. It also assumes that the company has a whole battery of effective selling and promotion tools to stimulate more buying.

4. **The Marketing Concept:** The marketing concept is a business philosophy that challenges the three-business orientation we have just discussed. The marketing concept holds that the key to achieving its organisational goals consists of the company being more effective than competitors in creating, delivering, and communicating customer value to its chosen target markets.

Theodore Levitt of Harvard drew a perceptive contrast between the selling and marketing concepts, which is summarised in Diagram-3.

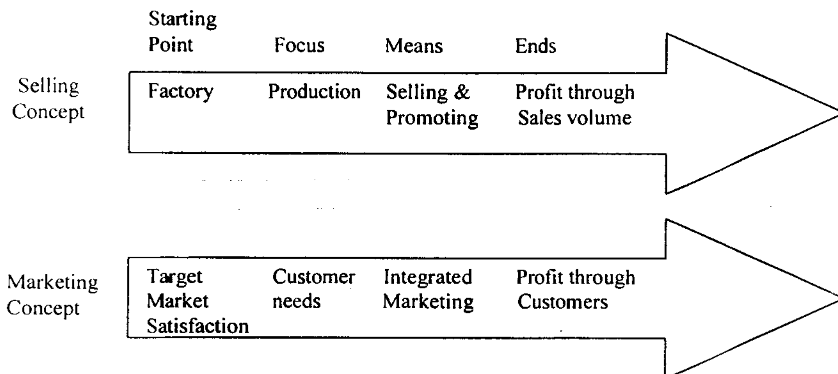


Diagram 3: Comparison of selling and marketing concepts

5. **The Societal Marketing Concept:** The societal marketing concept holds that the organisation's task is to determine the needs, wants and interests of target markets and to deliver the desired satisfaction more effectively and efficiently then competitiors in a way that preserves and enhances the consumer's and the society's well-being. The societal marketing concept calls upon marketers to build social and ethical considerations into their marketing practices.

Marketing Mix:

Marketing mix is the set of marketing tools that the firm uses to pursue its marketing objectives in the target market.

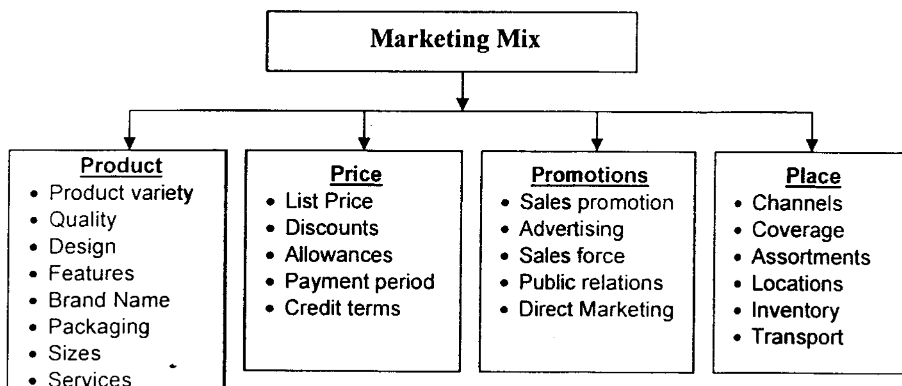


Diagram 4 : The Marketing Mix

Mc-Carthy classified these tools into four broad groups that he called the four Ps of Marketing : Product, Price, Place and Promotion. Diagram 4 illustrates the components of marketing mix.

Four Ps and their Parameters

(1) **Product :** The product includes following parameters :

(a) **Branding** is a major issue in product strategy. A brand is a name, term, sign, symbol, design or a combination of them, intended to identify the goods or services of one seller or group of seller and to differentiate them from those of competitors.

(b) **Packaging** includes the activities of designing and producing the container for a product.. Many marketers have called packaging a fifth P, along with price, product, place and promotion.

(c) **Labelling** The label may be a simple tag attached to the product or an elaborately designed graphic that is a part of the package. The label might carry only the brand name or a great deal of information. Even if the seller prefers a simple label, the law may require additional information.

(2) **Price :** Price is the money value of a product or service agreed upon in market transactions. We have a kind of price equation where:

Money (price)= Bundle of Expectations or Satisfactions

The bundle of expectations include physical products and other attributes like, delivery, installation, credit, retain privileges, discounts, after sales servicing and so on. Price is also one of the most flexible elements. It can be changed quickly, unlike product features and channel commitments. Prices are a key positioning factors and must be decided in relation to the target market.

(a) *List pricing* involves the company in dealing how to price its products to different customers in different locations and countries. Most companies will adjust their list price and give discounts and allowances for early payment.

(b) *Cash discount* is a price reduction to buyers who pay their bills promptly.

(c) *Quantity discount* is a price reduction to those who buy larger volumes.

(d) *Functional discount*, also called as *trade discount*, are offered by a manufactures to trade channel members.

(e) *Allowances* are extra payments designed to gain reseller participation is special programs.

(3) **Place or Channels:** Marketing channels are sets of interdependent organisations involved in the process of making a product or service available for use or consumption. Marketing channels indicate routes or pathways through which goods and services flow or move from production to consumers. The major actors are- Retailers, Brokers, Agents, Whole seller, Franchisees, Sole traders. Corporate Retail Organisations achieve economies of scale, greater purchasing power, wider brand recognition and better-trained employees. The major types of corporate retail organisations are - Corporate Chain Stores, Voluntary Chain, Consumer Cooperative, Franchise Organisation, Merchandising Conglomerate etc..

Retailing: is a trading activity related to the sale of goods or services to the ultimate consumer for personal and non-business use. Retail organisations exhibit great variety and new forms keep emerging. There are store retailers, non-store retailers and retail organisations. Consumers today can shop for goods and service in a wide variety of stores. Like Specialty Store, Department Store, Super Market, Convenience Store, Discount Store, Off Price Retailer Super Store, Catalogue Showroom etc..

Wholesaling: includes all the activities involved in selling goods or services to those who buy for resale or business use. Wholesaling excludes manufacturers and farmers because they are engaged primarily in production, and it excludes retailers. The major types of wholesalers are described below.

i. **Merchant Wholesalers:** They are called jobbers, distributors or mill supply houses and fall into two categories - full service wholesales who carry stock, maintain a sales force offer credit, make deliveries, and provide management assistance and limited services wholesales who offer fewer services to suppliers and customers. Cash and carry wholesalers have a limited line of fast moving goods and sell to small retailers for cash.

ii. **Brokers and Agents:** do not take little to goods, and perform only a few functions. Main function is to facilitate buying and selling, for which they earn a commission of 2 to 6% of the selling price. They specialise product line-wise or customer-wise.

iii. **Miscellaneous Wholesalers:** A few specialised types of wholesaler's are found in certain sectors of the economy. They include agricultural assemblers.

Emerging Forms of Distributions

(1) **Market Logistics:** The process of getting goods to customers has traditionally been called physical distribution. Recently, physical distribution has been expanded into the broader concept of supply chain management. This view is that of market logistics. Market logistics involves planning, implementing, and controlling the physical flows of materials and final goods from points of origin to points of use to meet customer requirements at a profit.

(2) **Direct Marketing:** Direct marketing is an interactive marketing system that uses one or more advertising media to affect a measurable response and/ or transaction at any location.

Major Channels for Direct Marketing

Direct marketers can use a number of channels for reaching prospects and customers.

(a) **Face-to-face Selling:** The original and oldest form of direct marketing is the field sales call. Today most industrial companies rely heavily on a professional sales force to locate prospects,

develop them into customers, and grow the business or they hire manufacturer's representatives and agents to carry out the direct selling task.

(b) **Direct Mail:** Direct-mail marketing involves sending an offer, announcement, reminder, or other item to a person at a particular address through postal mail, fax mail, email or voice mail. Using highly selective mailing lists, direct marketers send out millions of mail pieces each year letters, flyers, foldouts etc.. Direct mail is a popular medium because it permits target market selectivity, can be personalised, is flexible and allows early testing and response measurement.

(c) **Catalogue Marketing:** Catalogue marketing occurs when companies mail one or more product catalogs to selected addresses. They may send full-line merchandise catalogue, specialty consumer catalogue, and business catalogues, usually in print form but also sometimes as CDs, Videos, or on-line.

The success of a catalogue business depends on the company's ability to manage its customer lists so carefully that there is little duplication or bad debts, to control its inventory carefully, to offer quality merchandise so that returns are low, and to project a distinctive image.

(d) **Telemarketing:** Telemarketing describes the use of telephone operators to attract new customers or to contact existing customers to ascertain satisfaction levels or to take orders.

(e) **Other Media for Direct Response Marketing:** Direct marketers use all the major media to make direct offers to potential buyers. Newspapers and magazines carry abundant print ads offering books, articles of clothing, appliances, vacations, and other goods and services that individual can order by dialing toll-free numbers. Radio advertisements present offers to listeners 24 hours a day. Television is also used by direct marketers in three ways to

promote direct sales. Direct response advertising, At-home shopping channels, Video text and interactive.

(f) **Kiosk Marketing:** Some companies have designed - "customer-order-placing machines" called kiosk and placed them in stores, airports and other locations.

(4) **Promotion:** Promotion is the process of marketing communication to inform, persuade, remind and influence consumers or uses in favour of this product or services. The modern age is the age of severe competition. Therefore, manufacturers have to think of new and unfamiliar ways of communicating about their product to the customers. Promotion involves the creation and expansion of demand. After product development, it is introduced in the market and its demand is created through promotional activities. Promotion is just like the spark plug in the marketing-mix of a firm. Promotion is the process of marketing communication involving information, persuasion, and influence. Promotion has been defined as.

"Co-ordinated self initiated efforts to establish channels of information and persuasion, to facilitate or foster the sale of goods or services, or the acceptance of ideas or points of view." The promotion-mix of a firm includes five ingredients, viz. Advertising, publicity, and public relations, personal selling and all forms of sales promotion. All these efforts try to influence consumer's attitudes, beliefs, ways of living or life style, values and preference towards a company and its products and thereby influence his/her behaviour. All elements of promotion-mix have a defined role in all stages of the selling process. The main objective of promotional activities to influence the customer in such a way that he purchases the product of his own will and then patronises same brand in future too. Each promotional tool has its own unique characteristics and cost

(i) **Advertising :** Advertising is any paid form of non personal presentation and promotion of ideas, goods and services by an identified sponsor.

(ii) **Sales Promotion:** Sales promotion consists of a diverse collection of incentive tools, mostly short term, designed to stimulate quicker or greater purchase of particular products or services by consumers or the trade. Whereas, advertising offers a reason to buy, sales promotion offers an incentive to buy.

Several factors contribute to the rapid growth of sales promotion, particularly in consumer markets. The rapid growth of sales-promotion media has created a situation of promotion culture similar to advertising culture.

Tools of Sales Promotion are Classified as –

(a) **Consumer Promotion Tools:** The main consumer promotion tools are - Samples, coupons, cash refund offer. Price packs (cent off deals), Premiums (gifts), Prizes (contests, sweepstakes, games), Patronage Awards - values in cash or in other forms that are proportional to patronage of a certain vendor or group of vendors, Free Trails, product warranties, Tie in promotion, cross promotion, point of purchase (POP), displays and Demonstrations.

(b) **Trade Promotion Tools:** The growing power of large retailers has increased their ability to demand trade promotion at the expense of consumer promotion and advertising. Price-off (off invoice/off list), Allowance, free goods etc. are prominent trade promotion tools.

(c) **Business and Sales Force Promotion Tools** : These tools are used to gather business leads, impress and reward customers, and motivate the sales force to greater effort. Companies typically develop budgets for each business-promotion tool that remain fairly constant from year to year. The prominent business and sales promotion tools are - Trade shows and conventions, sales contests, speciality advertising. Speciality advertising consists of useful, low-cost items bearing the company's name and address, and sometimes an

advertising message that sales people give to prospects and customers.

(iii) **Public Relations and Publicity:** A public is any group that has an actual or potential interest in or impact on a company's ability to achieve its objectives. Public Relation (PR) involves a variety of programmes designed to promote or protect a company's image or its individual products. The old name for PR was publicity, which was seen as the task of securing editorial space as opposed to paid space in print and broadcast media to promote or "hype" a product, services, idea, place, person or organisation. The main tools of PR are:

(a) **Publications:** Companies rely extensively on published materials to reach and influence their target market like annual reports, articles, brochure, etc..

(b) **Events:** Companies can draw attention to new products or other company activities by arranging special events like news conferences, seminars, outings, exhibits contests etc.

(c) **Speeches:** Increasingly, company executives must field questions form the media or give talks at trade associations of sales meetings. These appearances can build the company's image.

(d) **Public Service Activities:** Company can build goodwill by contributing money and time to good and common causes.

(e) **Identity Media:** In a society marked by sensory overload, companies compete for attention. They need a visual identity that the public immediately recognises.

(4) **Personal Selling:** Personal selling is an ancient art. It has spawned a large literature and many principles. Effective sales persons have more than instinct. They are trained in methods of analysis and customer management. Three major aspects of personal selling are: sales professionalism, negotiation, and relationship marketing.

Marketing of Services

Philip Kotler defines: Service as any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything. W.J. Stanton, states that, services are those separately identifiable, essentially intangible activities, which provide want satisfaction, and are not necessarily tied to the sale of a product or another service. To produce a service, may or may not, require the use of tangible goods. However, when such use is required, there is no transfer of title to these tangible goods. As in the case of a product, services also start from understanding the marketing dynamics of want satisfaction of the customers.

Services have a number of unique characteristics that make them so different from products.

(1) **Intangibility:** Services are said to be intangible as they cannot be measured, felt, seen or tasted.

(2) **Inseparability:** In most cases a service can not be separated from the person or firm producing it. A service is provided by a person who possesses a particular skill.

(3) **Heterogeneity / Variability:** Services are produced and consumed simultaneously. It is always unique, it only exists once and is never repeated this makes standardisation a very difficult task to achieve.

(4) **Perishability:** Services can not be stored and are perishable.

(5) **Ownership:** When a service is bought or purchased, it does not involve the transfer of ownership as in case of products.

A service is purchased for the benefits it provides. From marketing viewpoint, the same concepts and techniques are applicable for both products and services.

Marketing-mix for Services

For marketing of products, the four elements of marketing mix are product, price, distribution and promotion, which are used in a specific combination to arrive at the marketing strategy. In case of services, there are three

additional elements. These elements are people, physical evidence, and process.

(a) **People**: People constitute an important dimension in the management of services in their role both as performers of services and as customers. People as performers of services are important because, a customer sees a company through its employees. The employees represent the first line of contact with the customers. They must, therefore, be well informed and provide the kind of service that wins customer approval. Customers are important because they are a source of influencing other customers.

(b) **Physical Evidence:** Includes facilitating goods, surroundings, decor and comfort. There may be two kinds of physical evidences.

   (i) *Peripheral evidence* is the actually possessed as a part of the purchase of service but by itself is of no value for example, Airline ticket.

   (ii) *Essential evidence* are building, it size and design, interior layout, logo and other devices of organisation. They are not possessed by the customers in contrasts to the peripheral evidence.

(c) **Process:** is concerned with the functional aspects such as service, production, delivery, queuing systems and qualifying delivery.

The marketing of services requires an extended marketing mix comparing production, pricing, promotion and distribution as well as people, physical evidence and process. The marketer has to lay great stress on the last three elements of the marketing strategy and combine them with the first four to achieve a harmonious blend, which fulfils the customers wants-satisfaction.

CHAPTER - ONE

CONCEPTUAL FRAMEWORK

SECTION - THREE

PHARMACEUTICAL PRODUCTS

CHAPTER - ONE

CONCEPTUAL FRAMEWORK

SECTION - THREE

PHARMACEUTICAL PRODUCTS

This section is devoted to an overview of pharmaceutical concepts, pharmaceutical products and the framework for the Indian pharmaceutical industry.

Pharmaceutical Products

Pharmaceutical products are medicinally effective chemicals that are converted to dosage forms suitable for patients to imbibe. Pharmaceutical products consist of two main components.

1. **Active Pharmaceutical Ingredient (API)**: API is the basic chemical form of pharmaceutical products. They are also called as *bulk drugs*. They are derived from four types of intermediates (raw materials), namely:

   I. Plant derivatives (herbal products)

   II. Animal derivatives (Insulin extracted from bovine pancreas)

   III. Synthetic Chemicals (Paracetamol)

   IV. Biogenetic Derivatives (Human Insulin)

2. **Formulation:** The final suitable dosage forms are known as *formulations*. i.e., a Tablet, Injection, Ointment, Capsules, Syrups, etc. in which a medicine is marketed and administered. With about 60,000 pharmaceutical formulations available in India compared to less than 4,000 in some developed countries, pharmaceutical marketing in India is a highly competitive business.

Generally, APIs are either produced by chemical synthesis or are of plant, animal, or biological origin.

Fletcher, K. and Hart, S. write that patents are critical aspects in the development and marketing of pharmaceutical products. A patent can be obtained for a new drug molecule, a new indication for an existing molecule,

or for a new drug delivery system of an existing product. The World Trade Organization (WTO) has decided to enforce a product patent life of 20 years in all countries. In other words, if drug development and FDA approval takes approximately 10 years from the first disclosure of the molecule, a pharmaceutical company gets only 10 years of exclusivity to market the formulation. The excessive cost of drug development forces drug prices to remain high while patents protect the drugs. In addition, not every project leads to a marketed product, so successfully marketed products must cover the costs incurred for the failed projects.

Marketing of Pharmaceutical Products

The basic marketing concepts in the pharmaceutical industry are similar to those of other industries. The idiosyncrasies of drug, business however, requires a modified marketing approach.

Traditionally in marketing, a distinction is made between three types of industries: Consumer goods, industrial goods and services. Consumer goods marketing deals with products that move from the producer to the final consumer without any major transformation. The buyer of the product, unless there is a wholesaler or distributor, is also its customer.

Industrial marketing focuses on products that are investment goods that yield services; the buyer does not consume the product, instead the buyer uses the product as an input in a production process. Service marketing is different again, because it involves intangible products for which production and consumption occur simultaneously.

Philip Kotler emphasizes that the marketing principles of segmentation, positioning, competitive analysis, and marketing mix allocation apply for all three categories. The specific context of production-consumption for those three types of product categories, however, require adjustments to the basic marketing principles that give rise to three unusual marketing disciplines.

Pharmaceutical products include *prescription or ethical* and *non-prescription or Over-the-counter* (OTC) drugs. OTC products are somewhat similar to consumer goods and are therefore have not been considered in detail for this research work. Prescription products share characteristics in common

with industrial goods and some other characteristics with consumer goods. Corstjens, M. in his book *Marketing Strategy in the Pharmaceutical Industry* illustrates a omparison of consumer, industrial and pharmaceutical marketing which is shown in Table 1.

The similarities with industrial goods are due to involvement of many parties in the buying decision process. In the industrial good market a distinction is usually made between the following five parties in the buying decision process, namely, initiator, influencer, decider, purchaser and user. For prescription or ethical drugs the following different parties can be identified:

Table 1: Comparison: Consumer, Industrial and Pharmaceutical Marketing

S. No.	Factor	Consumer Goods	Industrial Goods	Pharmaceutical Goods
01	02	03	04	05
1	Customer	- Large Population - Relatively simple decision making - Consumer pays	- Small Population - Complex buying - Buyer pays	- Large Population - Complex buying - Consumer/Insurer / Government pays
2	Products	- small transactions at relatively low unit - Purchase is not major	- Usually large unit value - Purchase is major	- Small transactions for relatively high cost - Purchase is major - Ethical dimensions are vital
3	Regulation	- Relatively minor - Patents are not crucial	- Relatively minor - Patents can be important	- Very important - Patents are crucial - Government touches on all elements of marketing mix
4	Price	- Sensitive - Highly Elastic	- Highly Sensitive - Inelastic	- Insensitive - Inelastic
5	Research & Development	Not crucial	Can be crucial but 70% of all successful new industrial goods come from customer suggestions	Is complex, risky and *sine qua non* for new products

1. Prescriber – Physician
2. Influencer – Hospitals, Nurses, Professors, Reimbursement Agencies, Government.
3. Consumer – Patient
4. Financer – Partly patient, partly government, and partly insurance organizations. Sometimes NGOs and managed health care organizations too finance.

Prescription drugs also have similarities with consumer goods – they are often aimed at relatively large population of consumers.

The main idiosyncrasies of the prescription drug industry are the Research and Development process, ethical dimension and government intervention in practically all the aspects of marketing mix.

1. Research and Development Process

Research and Development (R&D) activity is very expensive in drug industry. The R&D process is usually very long, taking on average, between 10-12 years to discover, develop and fully test a new drug. The process is also expensive: The cost of bringing a new drug through the necessary trials is estimated in $500-1000 million. The procedure is risky, with low probability of success for a new research project. The attrition rate, that is rate of discard of drugs due to severe or adverse side effects, of a new substance is extremely high. Most estimates suggest that only one compound out of every 5,000 examined reaches the market. The integration of this expensive, risky and time-consuming R&D activity with marketing dimension poses unique challenge to marketing pharmaceutical products.

A trial and error R&D approach leads logically to a technological, rather than a market-driven new product development process. Trial and Error research confronts marketing management with new products with certain product characteristics for which a target market has to be selected, rather than other way around.

2. The Ethical Dimension

The ethical dimension of its product puts the drug industry in a special category. Health and the products related to it are very sensitive issues for consumers, prescribers, influencers and financers. The risk involved in the use of pharmaceutical products has important marketing implications. Relatively low price sensitivity for the patient, exogenous restrictions on marketing activities, inertia in prescribers' behaviour to switch away from trusted brands, evidence of side effects and litigation problems of drug companies and the impact of new drugs on the overall health of society, all lead to rather specific marketing problems in the pharmaceutical industry.

3. Government Intervention

Government and third party influences are constrains that have to be integrated and eventually turned into an opportunity in the marketing of Pharmaceutical products.

An introduction to the elements of pharmaceutical marketing is as follows:

Product

a) Launching New Products

Companies that fail to develop new products are putting themselves at great risk. Their existing products are vulnerable to changing customer needs and tastes, new technologies, shortened product life cycles and increased domestic and foreign competition. However, in view of patents coming into force from 2005, majority of the pharmaceutical houses is busy in launching new products with greater intensity, which was seen never before.

New products are the backbone of any organization's success. They are the lifelines for profitability. They are the accelerating factor for making company's supremacy in the market. New products provide companies an important tool to have an edge over its competitors. Therefore, many progressive companies have been giving more emphasis to launching of new products.

A new product could be the one that is new to the world or new to the country. Till 31st December, 2004 several drugs that were invented all over the world and were launched in India quickly with the help of the then policy of process patents. Almost every molecule launched was the result of this policy. From 1st January, 2005 the policy is changed to product patents.

A new product is required to increase the sales and market shares, and to meet changing customer needs and preferences: The only thing that remains forever in a growing industry is 'change' and the pharmaceutical industry is no exception to it. The need for non sedative anti-allergic lead to the launch of Cetirizine brands and the preference of solid hematinics made companies like Franco-Indian Pharmaceuticals, Medley and Alkem launch Dexorange Capsules, R B Tone Caps and Hemfer Caps respectively.

b) Drug Compliance

Standberg (Standberg, *L.R*, 1984); *Smith (*Smith, D. 1989); a New York Times report (New York Times, 1998); *Schering Report* (Schering *2001)* and a WHO report (WHO report, 2004) verify that adherence to therapies is a primary determinant of treatment success. Poor adherence attenuates optimum clinical benefits and therefore reduces the overall effectiveness of health systems. Medication non-compliance (non-adherence), the failure to take drugs or to take them on time in the dosages prescribed, is as dangerous and costly as many an illnesses. Studies have shown than non-compliance causes more deaths annually than perhaps even the major diseases. A rough estimate suggests that as many as 50% of drugs prescription are not taken correctly.

There are many reasons for medication non compliance. Some of the major reasons are:

I. Forgetting to take the drug

II. Not understanding or misinterpreting the instructions

III. Experiencing side effects (the treatment may be perceived as worse than the disorder)

IV. Denying the disorder (repressing the diagnosis or its significance

V. Not believing that the drug can help

VI. Mistakenly believing that the disorder has been sufficiently treated (for example, thinking an infection is over just because the fever disappears)

VII. Fearing adverse consequences from or dependence on the drug

VIII. Worrying about the expense

IX. Not caring (being apathetic) about getting better

X. Encountering obstacles (for example, having difficulty swallowing tablets/capsules, having problems opening bottles, considering treatment inconvenient, and being unable to obtain the drug)

Among the many reasons that *Schering Report* (2001) and *Merck Manual* (2004) mention for not complying with drug treatment, forgetfulness is the most common.

This non-compliance of drugs has been found to have appalling (severe) effects on the health of the patient like death, loss of quality of life. They also incur high costs due to the increased risk of hospitalization and additional healthcare interventions. Studies show that 20 to 25 percent of hospital and nursing home admissions are due to non-compliance of drugs.

Pricing

The Indian pharmaceutical environment is a mix of the controlled and free market, where prices are determined by competition and government controls. The government authorities regularly revise the prices of a number of molecules. Prices are controlled if the molecule is judged to be an essential drug and if there is inadequate competition.

The National Pharmaceutical Pricing Authority (NPPA) is in charge of price regulation that is laid out in the Drug Price Control Order of 1995 (DPCO). Direct controls are imposed on bulk drug prices, while the price of formulations is limited through the maximum allowable post-manufacturing expenses (MAPE) mechanism, which allows a 100% post-manufacturing mark-up for domestically produced drugs and 50% for imports. Maximum retail prices are set for a period of three years, although the NPPA can intervene at any time for reasons such as a significant fall in imported bulk prices that does not result in a decrease in finished product prices.

Prices can be raised by the NPPA to reflect increases in input costs, but this is the exception and cuts are both more frequent and more severe. For example, in a pricing exercise covering 62 formulations in early 2002, the prices of 45 products were lowered by between 5.7% and 90.2%, the prices of four products were raised by 6.7% to 16.6%, the prices of 12 drugs were fixed for the first time, and one product price was left unchanged.

Place

a) Enterprise Resource Planning (ERP)

ERP refers to the techniques and concepts for the integrated management of business as a whole, from the viewpoint of the effective use of management resources to improve the efficiency of an enterprise. It serves an important function by integrating separate business functions like, materials management, product planning, sales, distribution, finance, accounting and others. Such a system enables improved business performance. Its distinct advantages are

1) Inventory Reduction;
2) Increased Business Agility;
3) Cycle Time Reduction and
4) Order fulfillment improvement.

b) Sales Operations

One of the avowed promises of marketing function at the beginning of its evolution was to make its selling function redundant. If marketing is perfect, customers will come to buy the product on their own, the company need not take it to them. Marketing so far has failed to fulfill this promise and probably it will remain unfulfilled in future. Selling function has become more important than yesterday. Selling is a crucial operation in pharmaceutical marketing also.

c) Market Segmentation

The traditional selling approach to market goods tended to look upon entire market as homogeneous in terms of needs, expectations and decision-making. This was true till monopoly or less competition kept the market essentially as sellers market. However intense competition of our times soon transformed the scenario into a buyers market. Now the selling approach was no longer effective. Marketing approach that evolved to fill the vacuum caused by the growing failure of selling approach is characterized by three broad stages as shown below:

1) Market Segmentation

   i) Identify bases for segmenting the market

   ii) Develop segment profiles

2) Market Targeting

   i) Develop measure of segment attractiveness

   ii) Select target segments

3) Market positioning

   i) Develop positioning for target segments

   ii) Develop a marketing mix for each segment

Promotion

Training and Development of Sales Persons

Training is defined as the set of intellectual, purposeful and skilled activities that is meant for the development of the individual and the organization as a whole. In other words, it is viewed as a process of learning concepts and enthusiastic actions to facilitate and improve confidence and performance of the trainee in his job. Pharmaceutical industry has been recognized as knowledge based industry and therefore training of its sales force is considered vital for effective marketing.

Detailing

Detailing is a unique aspect of Pharmaceutical selling and it is difficult to find its parallel in marketing of any other product. Pharmaceutical selling essentially employs *missionary type of selling* which implies that the salesman does not sell the product directly but induce sales through his activities like communicating or convincing the indirect customer who can initiate and influence the sale of product.

Thus, pharmaceutical manufacturers manufacture drugs and supply the same to the chemist shops (Pharmaceutical Retailers) through distribution intermediaries such as whole-sellers and carrying and forwarding agents. Patients buy medicines from such retail outlets as per the prescriptions

written by the physicians. Physician, therefore, is the kingpin in the entire process. Medical representatives of pharmaceutical companies visit physicians and hospitals regularly and appraise them of products, new as well as existing; benefits they provide to the patient and other information that physician would want to have regarding the drugs such as price, safety data, precautions, contra-indications etc. This communication is referred as detailing. If convinced of the merit of the brand being detailed, a physician begins to prescribe this medicine thus boosting its sale. This entire picture has been shown in Diagram 5.

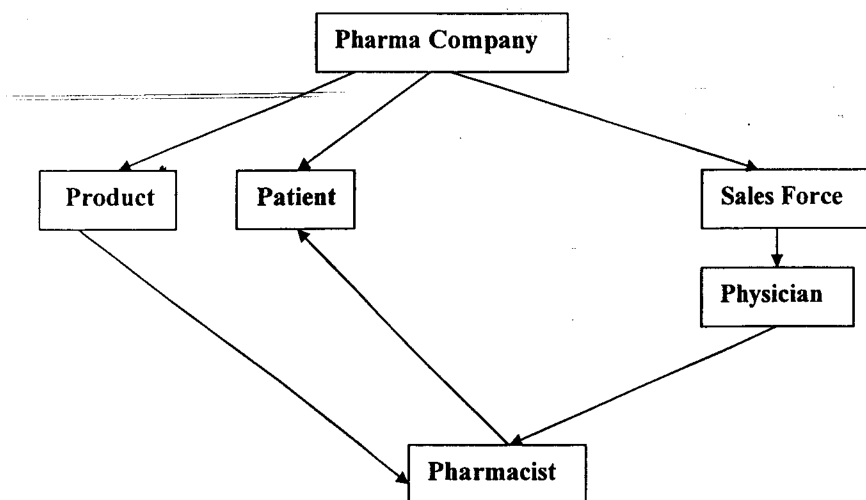


Diagram 5: Schematic Representation of Marketing of Pharmaceutical Products

The relationship of physicians and medical representatives (MRs), therefore, plays a vital 'role in selling of medicines. Larger the pharmaceutical organization more MR does it employ and better trained its MR are for detailing their products.

Thus, the survival and growth of pharmaceutical firms depend on Research & Development and size of the sales force. For any organization to do well in today's highly competitive era, they must invest heavily in having a strong pipeline of new drug molecules and building a highly trained team of medical representatives.

Distribution of Samples

This is another unique and interesting feature of pharmaceutical marketing. Medical representatives while visiting physicians for detailing the product also distribute free samples. It is considered to be an important marketing tool and on an approximate estimate samples comprise 12-18% of market budget of any average pharmaceutical firm. The purpose of the samples is to encourage physicians to try out the brand and experience its benefits. Many physicians look forward to such gift samples as they allow them to treat financially challenged patients who cannot purchase medicines.

Customer Relations Management

Simply defined, Customer Relations Management (CRM) is the process of acquiring, retaining and growing profitable customers. It requires a clear focus on the service attributes that represent value to the customer and create loyalty.

In evolution process it came to existence after mass marketing had served its purpose. Mass marketing had evolved to extend economies of scale to the customers. But customers did not appreciate its "one size fits all" approach as each customer is unique and has unique aspirations and needs. CRM evolved to cater to the individual needs of customers. Information technology played a major role in evolving CRM by simply making it possible. Without the aid of IT tools CRM would have remained just a dream.

According to Philip Kotler, Customer Relationship Marketing holds that a major driver of company profitability is the aggregate value of the customer's base. CRM is particularly relevant for marketing pharmaceutical products detailed knowledge of and close relationship with physician can boost the sales.

Types of Drug Systems in India

B.K.Gupta and R.N.Gupta say that ancient civilization allowed India to develop various kinds of medical and pharmaceutical systems. In addition to the allopathic system, which is prevalent in the United States, Japan and

Europe, the following medical and pharmaceutical systems are also used by the Indian people.

1) **Ayurveda:** Ayurveda means "Science of Life." It encompasses fundamentals and philosophies about the world and life, diseases, and medicines. The knowledge of ayurveda is compiled in *Charak Samhita* and *Sushruta Samhita*. The curative treatment lies in drugs, diet, and general mode of life. *Bhagwan Dhanwantari* is believed to be the father of ayurveda.

2) **Siddha:** The *Siddha System* is one of the oldest Indian systems of medicine. Siddha means "Achievement." Siddhas were saintly figures who achieved healing through the practice of yoga. The siddha system does not look merely at a disease but takes into account a patient's age, sex, race, habits, environment, diet, physiological constitution etc.. Siddha medicines have been effective in curing some diseases, and further work is needed to truly understand why this system works.

3) **Unani:** The *Unani System* originated in Greece and prospered in India during the medieval period. It involves promotion of positive health and prevention of disease. The system is based on the humoral theory, i.e., the presence of blood, phlegm, yellow bile and black bile. A person's temperament is accordingly expressed as sanguine, phlegmatic, choleric or melancholic. Drugs derived from plant, metal, mineral, and animal origin are used in this system.

4) **Homeopathy:** Homeopathy flourished in Germany in the seventeenth and eighteenth centuries. In India, it is one of the commonly used methods to treat diseases. Physicians in the time of Hippocrates (400 BC) first observed that some substances produce symptoms of conditions that they were then used to treat. On the basis of this finding, a homeopathic medicinal agent, which can produce artificial symptoms in healthy human beings, can also cure a similar set of symptoms of natural diseases. It normally uses a single medicine, and the dosage is minimal, just enough to cure the disease.

5) **Yoga and Naturopathy:** Yoga and naturopathy are ways of life. In naturopathy, one applies simple laws of nature. It advocates proper attention to eating and living habits. It also involves hydrotherapy, mud packs, baths, massage etc.. Yoga consists of eight components: restraint, observance of austerity, physical postures, breathing exercises, restraining of the sense organs, contemplation, meditation, and samadhi.

The Pharmaceutical Market in India

Historical Background

A report named *Market Synopsis: India* of IMS Health says that in the early years following the independence MNCs were allowed, in India, to import drugs mainly low-priced generics and a few high-priced specialty items. When the Indian government increased pressure against the import of finished products, MNCs developed formulation units in India and exported only bulk drugs to that country. In the early 1960s, the Indian government encouraged the indigenous manufacture of bulk drugs. In the following decade, the Indian Patent Act prevented the grant of product patents for substances used in foods and pharmaceuticals. Only process patents were allowed for five years from the date of granting a patent or seven years from the date of filing the patent. Drug Price Control Order (DPCO) was introduced during the same period to prevent undue profiteering from essential medicines. MNCs were compelled to reduce their holdings to 40% in their Indian ventures. In the 1980s-1990s, domestic pharmaceutical companies flourished. As a result, the market share of MNCs fell to 35%, from 75% in 1971.

Key Market Indicators

The report *Market Synopsis: India* of IMS Health (2004) enlists the following indicators of the Indian pharmaceutical market

1. India's economy will grow by around 5-6% per annum during the next five years, with growth rates gradually increasing. Growth will be based largely upon exports supported by government and consumer spending growth. Economic growth will be insufficient to reduce unemployment significantly.

2. The new National Health Policy, which was approved by Parliament in April 2002, aims to boost public health expenditure from 0.9% to 2.0% of GDP by 2010, with the focus on expanding access at the primary care level. The central government's share of public health spending is set to rise from 15% to 25%, and total levels (public + private) of expenditure on health are predicted to rise from 5% to 6% of GDP by 2010.

3. The new Pharmaceutical Policy will halve the number of molecules under price control to around 30 (equivalent to 20-25% of the market's value) and contains measures to encourage R&D. However, its implementation has been delayed by public interest litigation. Companies will continue to press for further relaxation, but a change from price control to price monitoring by the NPPA appears a long-term prospect.

4. Private health insurance is growing, but at a more modest rate than initially predicted; explosive growth appears unlikely in the medium term. There is considerable private investment in specialized hospitals, which is creating new markets for innovative drugs but is also resulting in the introduction of more sophisticate cost controls.

5. Formularies and rational drug programmes are slowly becoming more widespread, driven by pioneering states such as Delhi and aid from pan-national organizations such as the World Health Organization (WHO). The National Health Policy envisages a nationwide essential drugs formulary for the primary care sector. It will become increasingly important for companies to gain admittance to formularies, although this will put more pressure on prices.

6. The generous gifts given by companies to key prescribers are attracting attention and may prompt government action to curb abuses. The National Health Policy calls for prescribing guidelines to be developed.

7. High levels of discounting and bonuses remain commonplace as a means of driving pharmacy sales, but there is growing disenchantment

with this approach. Nonetheless, generic companies in particular will continue to use discounts and bonuses to win pharmacy custom.

8. Price competition in popular therapeutic categories continues to be intense and may become fiercer in the approach to 2006, as Indian companies launch as many products as possible before the introduction of product patents. The introduction of VAT will end the variations in drug price between states due to different local tax rates.

9. The passage of the second amendments to the Patents Act keeps India on course for a TRIPs-compliant Intellectual Property Rights regime in 2005, but product patents will only be introduced at the last possible moment. Data exclusivity will be a major issue, both nationally and internationally, over the next few years, with the Indian industry seeking to tone down the demands of the multinationals.

10. The overall level of quality standards will continue to improve gradually. WHO Good Manufacturing Practice (GMP) standards are scheduled to become mandatory in 2004, which will result in the closure of non-compliant plants. The great majority of importers met the December 2002 deadline for registering products and foreign manufacturing facilities, which should help reduce imports of substandard drugs.

11. The dismantling of regulatory barriers and the issuance of new Good Clinical Practice (GCP) guidelines will boost the level of clinical trial activity in India. In future, multinationals will be able to start clinical trials in India at the same time as Europe and the US.

12. The level of industry restructuring is increasing as 2005 approaches. Indian companies are investing in manufacturing, marketing and R&D, while multinationals are buying 100% control of subsidiaries. Exports are driving the performance of many leading Indian manufacturers, and the government will seek to protect exports as far as possible when considering intellectual property protection.

13. Pharmaceutical distribution will remain fragmented and complex in the near to medium term, resulting in high distribution costs. The system would benefit from consolidation and several players hope to take a

step in this direction. Consolidation will remain hampered by powerful trade associations, however, and foreign investment in the sector will remain restricted in the near term.

14. Pharmacy chains are growing. With the present 5 Lakh strong retail pharmacy and chemist sector, a number of pharmaceutical companies are starting to build chains and more entrants are expected. The sector will gradually become better regulated. Coverage of retail pharmacies is improving as more outlets are opening in second tier cities.

Margin Structure

The report *Market Synopsis: India* of IMS Health says that the government does not control distribution and retail margins, pharmaceutical manufacturers have only limited room for maneuver in the margins they set. Under an agreement with the All India Organization of Chemists and Druggists (AIOCD), set margins have been established for both products under price control and for decontrolled drugs.

These margins, which remained unchanged in 2002, act as a guaranteed minimum, and the AIOCD is quick to counter any move to reduce them. Actual margins are often bigger than the rates given in the table 2, due to generous levels of discounts and bonuses. Approximate margin of profits, that stockists and retailers in Pharmaceutical trade are entitled to, have been shown in Table 2.

Table 2: Approximate Margin of Profits

Category	Stockist	Retailers
01	02	03
Controlled drugs	8%	16%
Decontrolled drugs	10%	20%

Source: Market Synopsis: India of IMS Health (2004)

Indian Health Statistics

India is the second largest populated country in the world, with a population of approximately 1 billion. The population is expected to grow to about 1.5 billion by 2050. Life expectancy at birth for males and females is 62.4 and

63.4 years, respectively, which is much lower than that of the Developed Countries. The total admission capacities for medical and pharmacy institutions of higher learning are 25000 and 26000 respectively. India has approximately 14,000 hospitals. The number of registered doctors and nurses is about 490,000 and 600,000, respectively.

Events Impacting Market Forecast

Pharmaceutical marketing is influenced by multiple variables. A summary of probable impact of some of the contemporary variables has been given in Table-3.

Table 3: Probable Impact of Events on Market Forecasts

S.N.	Event	Price		Volume	
		+	-	+	-
01	02	03	04	05	06
1	Economic growth of 5-6% annually will continue to gradually raise standards of living and drive private consumption, impacting pharmaceutical sales positively.			✓	
2	Demographic and epidemiological factors will drive drug usage. Rapid population growth will continue to drive demand.			✓	
3	Public sector investment in healthcare is set to increase substantially under the new National Health Policy, although the policy will take time to achieve results. In particular, the government aims to increase access to healthcare, through expansion of the primary care sector and central funding for essential drugs.		✓	✓	
4	Low income levels and inadequate healthcare infrastructure will continue to limit access to healthcare for a large majority of the population, especially in rural areas.		✓		✓
5	Patient out-of-pocket payments will remain the major source of healthcare funding. Price sensitivity will remain high and constrain both volume and price growth.		✓		✓
6	Healthcare insurance coverage remains very low and will grow only modestly in the short to medium term, although growth is expected to begin to accelerate in the longer term. Rather	✓		✓	

	than significantly broadening overall insurance coverage, this will mainly cover hospital treatment in the private hospital sector.				
7	Continuing private sector investment in speciality hospitals will create new markets for innovative drugs.	✓		✓	
8	Private investment will also begin to be directed towards primary and secondary care institutions, with the establishment of clinic and hospital chains planned by several companies.			✓	
9	Formularies and rational drug use programmes will grow in importance, with an essential drug formulary expected for primary care providers and prescribing guidelines for all doctors.		✓		✓
10	High levels of product launches will continue prior to the introduction of product patents expected in 2005. The proliferation of copy products will help volume growth, but fierce competition will drive prices down.		✓	✓	
11	Aggressive marketing and promotion campaigns, in some cases making use of unethical prescribing inducements, will continue to drive prescribing growth.			✓	
12	Price competition in most of the free market will remain fierce.		✓		
13	The new Pharmaceutical Policy is expected to halve the proportion of the market under price control. However, the intense competition in the market will limit price increases.	✓			
14	Import duties are declining, with the lower costs being passed on to consumers in most cases.		✓	✓	
15	The recent increase in launches of 'generic' generics will drive prices down.		✓	✓	
16	The introduction of product patents in 2005 will mean higher prices for new products, without the threat of generic competition. However, drug prices will come under increased public scrutiny after the introduction of product patents.	✓			
17	Leading companies will continue to be able to charge higher prices for some products, reflecting quality and innovation.	✓			
18	Product approval times are gradually improving, enabling new products to reach the market more quickly.	✓		✓	
19	Stricter GMP enforcement will increase costs and may drive some small companies out of business.	✓			✓

Source: Market Synopsis: India of IMS Health (2004)

The Industry Structure

Globally the output of Indian pharmaceutical industry ranks fourth in terms of volume and thirteenth in terms of value. Indian pharmaceutical industry has over 23000 units; around 260 players constitute the organized sector, while 6000-8000 players exist in Small Scale Sector. The industry is highly fragmented with largest formulation player having market share less than 6%. The top ten players account for 36% of market share. Globally top ten players account for as much as 49% of pharmaceutical market. Market can be divided into bulk drugs segment and formulations. The industry produces about 60,000 finished medicines and approximately 400 bulk drugs, which are used in formulations. India is one of the top five producers of bulk drugs in the world.

Summary of Indian Pharmaceutical Market

Indian Pharmaceutical market is substantial. Its Important details for the year 2002 have been shown in Table 4.

Table 4: Summary of Indian Pharmaceutical Market

S.No.	Factor	Measure
01	**02**	**03**
1	Market Size	180362 million Rs.
2	As % of total healthcare expenditure	25.3%
3	As % of GDP	1.3%
4	As % of World Market	1.6%
5	Growth Rate	7.2%

Source: Market Synopsis: India of IMS Health (2004)

Pharmaceutical Sales Forecast at Actual Prices

Pharmaceutical market is growing steadily. Table 5 provides the sales forecast for the period 2002-07 at actual prices.

Table 5: **Pharmaceutical Sales Forecast at Actual Prices**

S.No.	Year	Rupees (million)	Annual % Change
01	02	03	04
1	2002	180362	+10.3%
2	2003	197857	+9.7%
3	2004	219177	+10.8%
4	2005	242889	+10.8%
5	2006	269956	+11.1%
6	2007	297760	+10.3%

Source: Market Synopsis: India of IMS Health (2004)

Therapeutic Class Forecasts

The ~~therapeutic class~~ analysis, shown in Table 6 focuses on ten of the leading first level categories of the Anatomical Classification System (ATC 1), and is based on audited sales at ex-manufacturer price level. These ten classes accounted for 91.9% of the audited market in 2002 and their market share is forecast to be 92.2% by 2007.

Table 6: Therapeutic Class Forecasts (1997 to 2007) – Audited Sector

S. No.	ATC Class	1997		2002		2007		CAGR (±%)	
		Rs (million)	% Share	Rs (million)	% Share	Rs (million)	% Share	1997-2002	2002-2007
01	02	03	04	05	06	07	08	09	10
1	ATC A	26675.9	21.6%	42318.3	23.5%	69814.3	23.5%	9.7%	10.5%
2	ATC B	4226.9	3.4%	7892.1	4.4%	13787.3	4.6%	13.3%	11.8%
3	ATC C	7853.3	6.4%	15667.3	8.7%	30093.2	10.1%	14.8%	13.9%
4	ATC D	5698.5	4.6%	7683.6	4.2%	11784.1	4.0%	6.2%	8.9%
5	ATC G	3598.9	2.9%	6970.6	3.9%	13374.6	4.5%	14.1%	13.9%
6	ATC J	36346.4	29.5%	44032.6	24.4%	67669.5	22.7%	3.9%	9.0%
7	ATC L	317.5	0.3%	873.6	0.5%	1848.6	0.6%	22.4%	16.2%
8	ATC M	6580.7	5.3%	11638.9	6.4%	20259.3	6.8%	12.1%	11.7%
9	ATC N	8481.5	6.9%	11883	6.6%	19678.8	6.6%	7.0%	10.6%
10	ATC R	12683.9	10.3%	16676.3	9.3%	26299.3	8.8%	5.6%	9.5%
11	Others	10943.7	8.9%	14726.0	8.1%	23151.0	7.8%	6.1%	9.5%
12	Total	123407.2	100.0%	180362.3	100.0%	297760.0	100.0%	7.9%	10.5%

Source: Market Synopsis: India of IMS Health (2004)

Note: 1. ATC A means - Alimentary Tract And Metabolism
2. ATC B means Blood And Blood Forming Agents
3. ATC C means Cardiovascular System
4. ATC D means Dermatologicals
5. ATC G means Genito-urinary System/Sex Hormones
6. ATC J means Systemic Anti-Infectives
7. ATC L means Antineoplastic Agents/Immunomodulators
8. ATC M means Musculoskeletal System
9. ATC N means Central Nervous System
10. ATC R means Respiratory System

Major Therapeutic Segments

Table 7 gives details of comparative size of major therapeutic segments. The growth of different segments varies considerably. Some are growing very fast whereas certain others are even de-growing. Current pattern of growth of certain important segments has been provided in Table 8.

Table 7: Major Therapeutic Segments

S. N.	Major Therapeutic Segments	Market Size (Billion Rs.)	Market Share (Percentage)
01	02	03	04
1	Antibiotics	23	15.7
2	Cardiac Therapy	10.2	6.9
3	CNS & Psychiatric Therapy	9.6	6.5
4	Vitamins	8.9	6.1
5	NSAIDS & Anti rheumatic	8.8	6.0
6	Respiratory Ailments	7.8	5.3
7	Antacids and Antiulcerants	6.2	4.3
8	Anti anemic	3.7	2.8
9	Anti diabetic	3.7	2.8
10	Anti TB	3.6	2.5

Source: Intec Report – 2003

Growth of Major Therapeutic Segments

Growth pattern of major therapeutic segments varies considerably. Table 8 depicts the growth of major therapeutic segments.

Table 8: **Growth of Major Therapeutic Segments**

S.N.	Therapeutic Segment	Market Growth Rate Feb: 2003
01	02	03
1	Respiratory	5.6%
2	Anti-Infectives	-0.2%
3	Anti-Diabetics	20.3%
4	Cardio Vascular Segments	17.4%
5	CNS	13.4%

Source: Intec Report – 2003

Thus in the present scenario, the growth of a domestic pharmaceutical company is critically dependent on its therapeutic presence. The old and mature categories like anti-infective, vitamins, analgesics are de-growing while, new lifestyle categories like Cardiovascular, Central Nervous System (CNS), Anti Diabetic are expanding at double-digit growth rates. Increased generic penetration, intense competition, fragmentation of the industry has negatively impacted the overall value growth of the domestic pharmaceutical market. In this scenario, to grow in the domestic market, pharmaceutical companies are constantly eyeing for innovation, introduction of new value added products, product life cycle management and enlarging their market reach.

Major Players In The Pharmaceutical Industry In India

I Gupta in *The Quest of Global Growth* says that two types of companies exist in the Indian pharmaceutical sector, namely, *companies of Indian origin (domestic)* and *foreign MNCs.* GlaxoSmithKline, Cipla, Dr. Reddy's Laboratories, and Ranbaxy are the top four companies in terms of gross sales. The top MNCs with a presence in India are GlaxoSmithKline, Hoechst (Aventis). Marion Roussel, Knoll Pharma, and Pfizer. More than 20,000 pharmaceutical units exist in India. Ranbaxy, the leading domestic company, reported sales of Rs. 1745.9 Crores ($356.3 million, assuming that $1.00 = Rs 49) during 2000. Glenmark Pharmaceuticals, Cadila Healthcare, Ajanta Pharma, and Elder Pharmaceuticals are among other upcoming companies.

The major players in Indian pharmaceutical industry, as in the year 2002, are shown in Table 9.

Table 9: Major Players in the Pharmaceutical Industry

S. No.	Company	Sales (Crore Rs.)	Total Assets (Crore Rs.)	Net Profit (Crore Rs.)
01	02	03	04	05
1	Ranbaxy Laboratories	2,162.4	2,522.00	252
2	Dr. Reddy's Lab	1,711.8	1,844.8	495.7
3	Cipla	1,458	1,413.8	235.1
4	Glaxo-smithkline	1,143	786.5	75.3
5	Aurobindo Pharma	1,038.5	889.6	68.5
6	Lupin	963.6	1,245.5	72.2
7	Nicolas Piramal India	955.3	882.4	48.2
8	Sun Pharmaceuticals	748.0	654.5	168.6
9	Wockhardt	649.4	522.0	102.2
10	Aventis Pharma	609.9	416.4	66.6
11	Cadilla Healthcare	588.8	968.5	67.2

Source: Business World 3rd November 2003

Table 10: Top Pharmaceutical Products

S.N.	Product	Company	Sales Rupees (million)	% Growth in 2001/2002	% Share of ATC market
01	02	03	04	05	06
1	Becosules	Pfizer	835.8	11.6%	2.0%
2	Zinetac	Glaxo Wellcome	649.5	17.1%	1.5%
3	Neurobion	Merck Limited	555.9	-18.8%	1.3%
4	Omez	Dr Reddy's Labs	483.5	3.9%	1.1%
5	Human Mixtard 30	Knoll Pharma	454.7	8.5%	1.1%
6	Dexorange	Franco Indian	534.1	-7.5%	6.9%
7	Hepatoglobine	Raptakos Brett	281.5	44.2%	3.6%
8	R B Tone	Medley Pharma	218.0	-24.4%	2.8%
9	Clexane	Aventis Pharma	210.6	9.3%	2.7%
10	Fraxiparine	Sanofi Torrent	184.1	26.6%	2.4%
11	Cardace	Aventis Pharma	442.3	50.2%	2.9%
12	Aten	Zydus Cadila	396.8	27.6%	2.6%
13	Envas	Cadila Pharma	321.8	14.3%	2.1%
14	Stamlo	Dr Reddy's Labs	282.5	14.7%	1.8%
15	Dilzem	Torrent Pharma	262.0	32.0%	1.7%
16	Betadine	Win Medicare	472.2	-5.8%	6.1%
17	Betnovate-N	Glaxo Wellcome	323.0	27.8%	4.2%

Source: Market Synopsis: India of IMS Health (2004)

Top Pharmaceutical Products in India

Top Pharmaceutical Products in India has been shown in Table 10. Sale of pharmaceutical products vary from company to company. Sale of certain pharmaceutical products is exceptionally high. Becosule of Pfizer has crossed annual sales of Rs. 100 Crores mark in 2004-05. Table 10 gives the list of top products having highest sale in the year 2002.

Strengths and Weaknesses of Indian Pharmaceutical Industry

Indian Pharmaceutical Industries are well recognized in the world for the quantity as well as the quality of drugs. Its strength and weakness are given below.

1. **Strength**
   - a) Well developed industry with strong manufacturing base
   - b) Well established network of laboratories and R& D infrastructure
   - c) Highly trained pool of scientists and professionals
   - d) Strong marketing and distribution network
   - e) Very strong reverse engineering skills
   - f) Potential ground for clinical trials.
   - g) Fast growing healthcare industry
   - h) Cost competitiveness
   - i) Rich Biodiversity
   - j) Growing Biotechnology Industries
   - k) Potentially huge market with growing middle class
2. **Weaknesses**
   - a) Low per capita expenditure
   - b) Health infrastructure remains under developed

CHAPTER - TWO

METHODOLOGY

CHAPTER – TWO

METHODOLOGY

This Chapter contains Methodology of the study, Limitations of the Work and Profile of the Companies.

Introduction

The importance of the work undertaken can never be over-emphasized. Health has always been one of the core concerns of the human society. It is universally and eternally an important index to measure the success of any society. In general healthy societies have been prosperous too. Medicines are an important component of health-care system. Their availability and accessibility invariably determines the success of any health-care system. Thus, marketing and distribution of medicine will always be an important agenda for people and policy makers alike. How it is influenced by old and new variables in a fast changing reality has to be under constant scrutiny. Information Technology is a new variable. Its effect on marketing of pharmaceutical products deserves intensive and extensive study to fulfill our shared dream of providing health for all. It is important to identify new emerging models that can make a difference in the outcome. Because it is only after they are identified that they can be successfully implemented and replicated. For the same reason we should identify the wasteful, ineffectual and harmful models to avoid wastage of our efforts and scarce resources. Any human ingenuity is as easily and as widely abused or misused as it is used. Information Technology cannot be an exception. Thus, we also need to learn how IT can be misused or abused by marketers. Thus, the topic of research is relevant, significant and highly contemporary. The outcome is expected not to have just the theoretical importance but is likely to provide insights into marketing environment of pharmaceutical industry and well-structured set of guidelines that should help the society.

Objectives of the Study

Research in management, as V.P.Michael says, "is basically meant for specific purpose." Thus, this research work is primarily academic to understand the role of information technology in marketing pharmaceutical products and to acquire in depth knowledge. The objectives of this work may therefore be stated as follows:

1. To undertake in-depth study and analysis of the strategies adopted by pharmaceutical industry to market their product using information technology.
2. To estimate the extent of success or failure in using information technology in marketing pharmaceutical products.
3. To determine the new business models which may be tried in the near future along with the rationale behind them.
4. To identify the challenges posed to the government, market players and the society by pharmaceutical dealers/retailers/manufacturers using information technology to cheat the customers.
5. To suggest steps to set up mechanism to overcome fragmentation and lack of coordination amongst different healthcare providers to maximize the benefits of information technology.

Nature of Study

This study is empirical by nature, as the researcher is concerned to develop principles by arriving at generalizations and an aid to solve problems by improving knowledge, understanding skill and ability to make decisions. This study may also be seen as applied research as it has tried to test the known theories. The researcher is also concerned about collecting facts related to the pharmaceutical industry, products, marketing practices and the impact of information technology therefore, the research can also be termed as fact gathering research.

Research Design

A research design is purely and simply the framework or plan for a study that guides the collection and analysis of the data. It is a blueprint that is followed

in completing the study. This ensures that study remains relevant to the problem and employs economical procedures.

There are three basic types of research designs namely exploratory, descriptive and causal or experimental. As the design of investigation should stem from the problem hence it was important to comprehend the nature of investigation the researcher embarked upon. A careful analysis of investigative work shows that it is broad and vague and which needs to be broken into smaller, more precise, sub-problem statements. This type of research works is best dealt with using exploratory research work, hence the same was decided upon. To a certain extent design was also built around descriptive research, as the work requires describing certain trends, behaviors, strategies, beliefs etc. This research design helps the researcher in enhancing familiarity with the problem under investigation and to clarify concepts. It is expected to find new hypotheses that could be pursued by future researchers. The research design for this work may also be seen as descriptive research design as the researcher has tried to describe the critical phenomena in pharmaceutical marketing and tried to come up with certain specific recommendations that pharmaceutical marketers may find beneficial.

Basic methods of exploratory research are Literature Survey; Experience Survey; Analysis of Case Studies. All these methods, as useful for the research work, are therefore accepted as parts of the research design.

Review of Literature

Information Technology has distinctly changed the world. The impact on Information Technology has been very keenly observed and investigated by many researchers. They have analyzed, differentiated, measured and compared it at different levels and different spheres. The literature survey on which the research work has been based is rich and diverse. Understandably, most of it is very recent in origin.

Literature on Impact of Information Technology in General

Budhiraja (Budhiraja, R., 2004), *Hanna* (Hanna, Nagy K. 1991), *Accascina* (Accascina. G. 2000), *Mansell et al* (Mansell, R and When, U. 1998), and

Tallero (Tallero, E. and Gaudette, P. 1995) have done a pioneering work to link information technology with economic growth and development. *Ghaziri,* (Ghaziri, H. 1998) and *Grealish* (Grealish, A., 2004) have made analytical study of impact of information technology on Banking Sector, which has been thoroughly revolutionized because of the impact of information technology. Another area that has witnessed massive changes is the marketing of books. *Jermy* (Jermy, C. 1995) was one of the pioneers to research this aspect in detail.

Starko (Starko, A.J. 1995), has explored the possibility of using computers to enhance creativity in a learning process. *Coppala et al* (Coppala, N., Hiltz, S.R., and *Rotter, N.* 1999) in their early works have identified areas of modification in pedagogical techniques with the advent of computers. *Harmo et al* (Harmon, W. S. and Jones, G. M. 1999) and *Majumdar* (Majumdar, S. 1999) have done initial study on use of web for collaborative learning.

Evans et al (Evans, J.R. and Berman, B. 1995), *Lisanti* (Lisanti, T. 1999), *Schulz* (Schulz D.P. 1999), and *Tedeschi* (Tedeschi, B. 1999) have made in-depth study to comprehend the effect information technology has had on retail marketing.

Literature on Impact of Information Technology on Health Sector

Early researchers saw immense possibilities and opportunities in use of information technology to enhance and enrich the health sector. *Glowniak* (Glowniak JV. 1995), *Lowe et al* (Lowe HJ, Lomax EC, Polonkey SE. 1996), *Lafrance* (Lafrance S. 1997) and *Chapman* (Chapman, R. 1997) have shown how with the birth of the Internet, a revolution began that changed the way physicians and patients can access health information.

Brakeman (Brakeman 1996), *Higgins* (Higgins T. 1996), *Fink et al* (Fink S, Gorden G. 1997) and *Nussbaum* (Nussbaum G. 1997), through their groundbreaking research work, established how the open standards of communication with Internet protocols, can bring together, the resources of many healthcare systems.

Jones (Jones E. 1996) and *Macomber* et al (Macomber L, Sadler G. 1997) established, how, through the communication of current, comprehensive,

and accurate information among researchers, physicians, and patients, a powerful way to reduce cancer mortality is possible.

Edwards et al (Edwards G, Sandberg L. 997) and *Schiff et al* (Schiff L, Service R.1996) did primary research work to show how more and more healthcare technology leaders are turning to the Internet as a primary tool for improving communications. *Benneial* (Benneial J H, 1999) has demonstrated how the internet is able to deliver a supra system that is able to talk to all operating systems so that medical records may be shared.

Teich et al (Teich, J.M. ; Wrin, N.M., 2003) and *Ferri et al* (Ferri, C. A.; Klein S. R., 2002) have exhibited that telemedicine and disease management are two areas where internet technology can contribute immensely.

Rother (Rother, M. (2004), through her innovative research approach has shown that E-health is not panacea for our sick health system but it can certainly reduce the inefficiencies that are inherent in our system and to create an environment that fosters collaboration, sharing and increased trust. *Blendon* (Blendon RJ, Schoen C, DesRoches CM, Osborn R, Scoles KL, Zapert K. (2002) RJ, Schoen C, DesRoches CM, Osborn R, Scoles KL, Zapert K. 2002) have probed the disparities existing in health care system with the added dimension of digital divide.

Literature on Variables Affecting Pharmaceutical Marketing

Pharmaceutical marketing has evolved rapidly in last one or two decades. Its evolution however is being shaped by very many variables and not just information technology alone. Numbers of researchers have shown interest in investigating the influence of different variables on pharmaceutical marketing. Some such works are as follows.

Research **and Development** is the mainstay of pharmaceutical industry. It has assumed far greater significance in recent times. *Angilley* (Angilley, A. 1973), studied the Returns to scale in research in the ethical pharmaceutical industry. *Joseph et al* (Joseph A. DiMasi, Mark A. Seibring, and Louis Lasagna, 1994) studied the new Drug Development in the United States from 1963 to 1992. *Nightingale* (Nightingale, P., 2000), *Upadhyay et al* (Upadhyay, V., A. Ray and P. Basu 2002), *Nagarajan* (Nagarajan K. 2002)

and *Pradhan* (Pradhan, J.P. 2003) have researched how R&D practices will be shaping pharmaceutical industries in general and Indian Pharmaceutical industries in particular.

Globalization has greatly altered the business universe. It has brought forth new opportunities as also new threats to pharmaceutical industry too. *Smith* (Smith, Eric 2000), *Dubey*, (Dubey D.P.2002), and *Gombar* (Gombar, V. 2004) have assessed the impact of globalization on Indian pharmaceutical industry. *Joanna* (Joanna Slater, 2003) and *Kripalani* (Kripalani, M. 2004), through their research probing, have identified the new opportunities due to globalization for Indian pharmaceutical industries. *Dhar* et al (Dhar, B. and N. Rao (2002), have studied the impact of transfer technology fuelled by globalization on Indian pharmaceutical industry. *Vaishampayan et al* (Vaishampayan, P. and Chen, V.2004) and *Einhorn et al* (Einhorn, B., Magnusson, P. and Barrett, A. 2004) have done pioneering work to link impact of globalization on pharmaceutical industries of India and China.

World Trade Organization inspired **patent laws** have been the most controversial of all the factors that are influencing pharmaceutical marketing. *Richard et al* (Richard E. Caves, Michael D. Whinston, and Mark A. Hurwitz, 1991) did early research work on strategies to market drugs for which patent has expired. *Glasgow* (Glasgow, L.J. 2001) through his studies has demonstrated that new patent laws have been stretched too far in favour of the pharmaceutical marketers. *Fink* (Fink, C. 2001) predicted the behaviour of transnational pharmaceutical giants, in view of the tougher patent laws adopted by Indian Government. *Alam* (Alam, G. 1996), *Lanjouw* (Lanjouw, J.O. (1998), through their intensive studies identified the negative impact of new patent laws on Indian Pharmaceutical Industries. *Kamath* (Kamath, G. (2004) has shown how the new patent laws will adversely affect the availability of drugs. *Prasad* (Prasad, G. C. 2004) has explored how the new patent laws will result in consolidation of pharmaceutical industry. *Merchant* (Merchant K., 2004), *Karmali* (Karmali, N. 2004) and *Jha* (Jha, A., 2004) through their studies have researched on the emerging responses of pharmaceutical industry to the new intellectual property laws. *Lanjouw* (Lanjouw, J.O. 2000) and *Lodha* (Lodha, M. 2004) conclude that perhaps the

hue and cry being made in the name of patent laws is exaggerated. *Zimmerman* (Zimmerman, J. 1989) has investigated upon the market potential of drugs that are off patent.

As a result of globalization and TRIPS inspired patents regime **mergers and acquisition** have become important features of Indian pharmaceutical industry. A *Business Line* News item (*Business Line* News *2003)* shows how the climate is ripe for mergers and acquisition in India. *Narsalay* (Narsalay R. 2000) has studied the impact of cross-border mergers and acquisitions on competitiveness of Indian pharmaceutical industries. *Ganguli* (Ganguli, P. 2004) through her pioneering research work came to the conclusion that Indian pharmaceutical industry will benefit from the mergers and acquisitions taking place. *Prasad* (Prasad, G.C. 2004) has made an interesting case study on Glaxo-Sanofi deal.

Medical Insurance, if European and US experience is any indicator, that too will affect pharmaceutical marketing in a big way.. *Falaknaaz* (Falaknaaz S 2004 and Falaknaaz S 2005) has attempted to comprehend the influence of medical insurance on pharmaceutical industry.

Self-medication behaviour will foster newer marketing practices for pharmaceutical products. *Jha* et al (Jha, A., Dash S., 2003) has researched on the prevalence of self-medication behaviour in Sikkim. *Bakshi* (Bakshi, M. 2002) has shown through his investigations how self-medication may prompt pharmaceutical marketers to push their trusted medicines from prescription category to over-the-counter category. *Singh* (Singh, H. 2003) and *Mohanta, et al* (Mohanta, G.P. Manna, P.K. and Manavalan, R, 2004) have advocated promotion of rational drug use in this context.

Indian Medicinal Systems too are in the process of reinventing themselves. Their growing markets too have compelled pharmaceutical marketers to reshape themselves. An article in Express Pharma Pulse, (Anonymous, Express Pharma Pulse,2005) has advocated strengthening traditional Indian medicinal system.

Government is always concerned about the prices of medicines, particularly the life saving and essential ones. **Government regulations**, thus, in this

respect do affect marketing of pharmaceutical products. *Kenneth et al* (Kenneth G. Elzinga and David E. Mills, 1997) have researched on distribution and Pricing of Prescription Drugs. *Padmini* (Padmini, J. 2002), *Iyer* (Iyer, A. 2003), *Patel* (Patel, D.B.2003) and *Padmini* (Padmini, J. 2004) have researched on recent Drug Price Control Orders (DPCO) affecting the prices of pharmaceutical products in India.

Ethical aspects are of prime concern to pharmaceutical marketing. *Socolar et al* (Socolar D, Sager A. 2001) through his studies have shown that high prices justified by pharmaceutical firms on the basis of sales cost and R&D are not supported by the evidence on ground.

Literature on Impact of Information Technology on Pharmaceutical Marketing.

Pharmaceutical Marketing is different and unique. Not much work has been done in India so far to understand the influence of Information Technology on it. In US and in several other developed countries researchers have indeed attempted to understand the difference information technology is making in pharmaceutical marketing. Some of the works researcher came across include:

Determination of territory for medical representative has always been an important aspect of pharmaceutical marketing. *Zoltners* et al (Zoltners, A., Sinha, P.,1988) have made use of computer systems for designing best possible and viable territories for medical representatives.

Green et al (Green, P., Tull, D. and Albaum, G. ,1988) has developed a variety of mapping techniques to deal with the complications that arrive with higher dimensionality.

Research and Development and Marketing are the two important corner stones of pharmaceutical industry. Thus, their relationship is vital for the survival and growth of any pharmaceutical industry. Yet the precise nature of this relationship remains elusive. *Corstjèns et al* (Corstjens and Demeire 1988) used computer based business games for marketing simulation exercises, specially designed for pharmaceutical Industries to acquaint

Research and Development Staff with the intricacies of marketing environment.

Williams et al (Williams and Glenn ,1987) have shown the relationship between use of computer technology in drug invention and the subsequent boom of rational drug development. This, according to him, has created substantial opportunities for the integration of research & Development and Marketing.

Information Technology has changed the expectations and perception of consumers dramatically, thus, adding another dimension to marketing. *Kyrouz et al* (E.M., Holt, M., Miltmn, R. & Everett W. ,1988) have attempted to draw the profile of a twenty first century health care consumer.

Whitten et al (Whitten, P., Steinfeld & Hellmich, S.A., 2001) have examined the possible option for survival and growth for E-health firms. Retailing has gained greater importance ever since the arrival of information technology. *Regal* (Regal B. 2002) has attempted to understand the emergence of E-pharmacies in India and has explored the provisions that need to be enacted to overcome the possibility of their misuse and strengthen the healthcare system.

E-detailing touched the imagination of pharmaceutical marketers as nothing in history ever did. That is why it is one area where a lot of literature is available. A Datamonitor report (*Datamonitor*, 2000), *Benson* (Benson J. 2000) and *Fisher et al* (Fisher J. & Wang R. 2001) evaluated the opportunities provided by E-detailing. An article (Anonymous 2001) and Doctors.net.uk (2001) identified the strategies for maximizing the effectiveness of internet for e-detailing and physicians learning. *Bernewitz* (Bernewitz T. 2001) and *Bailey* (Bailey E. & Bates A. November 2001) studied advanced e-detailing strategies to improve pharmaceutical marketing. In India *Mohile et al* (Mohile, P. and Chindarkar D. S., 2000) researched upon the possibilities of e-detailing in India. An article (Anonymous -2004) article explained the power of e-detailing. *Barrett et al* (Barrett, M., Brown, E., Chiou, V., Murray, J. and Roland, E. (2000) researched on the Physicians unwillingness to receive information via email.

McRoberts (McRoberts, K. 1988) did pioneer research work about the capacity of tools of IT for reaching out to patients directly. Mohile et al (Mohile, P. and Chindarkar, D. 2001) explored possibilities of using internet for pharmaceutical product promotion. *Dogra* (Dogra, S. 2005) attempted to comprehend the possibility of applying Geographical Information System (GIS) to map health infrastructure. *Nair* (Nair, B 2002 and 2003) identified the advantages of using Enterprise Resource Planning (ERP) to improve operations in pharmaceutical industries. *Vijaya* (Vijaya K 2003) and *Arur* (Arur, U. 2003) researched upon the application possibilities of Customer Relations Management (CRM) for marketing medicines.

From the literature survey it becomes apparent that a comprehensive study on impact of information technology on pharmaceutical marketing has not been undertaken. Hardly any work has been done in this area in India. Since information technology does not only reflect enormously enhanced potential but also enormously enhanced cost too, hence it is critical. Further it naturally has limitations. Thus, a study on its impact on pharmaceutical marketing is due for more reasons than one.

Universe or Population

The universe or population for a study is the specific group of people, firms, conditions, and activities etc., which form the pivotal point of any research project. The population for this research work is all pharmaceutical companies operating in India and physicians practicing in India. This will also include pharmaceutical products, intermediaries and tools of information technology. To elaborate, there are over 20,000 pharmaceutical firms operating in India currently. It was practically not possible to include all the firms for investigation. It has already been stated that focus of investigation was on allopathic drugs and drug manufacturers. Sampling frame, in this respect, is made at two levels – Size of firm and Geographical location. Universe is categorized in terms of size as:

1. Large Sized Firms / Multinational Firms
2. Moderate Sized Firms / National Firms
3. Small Sized Firms / Regional Firms

And on the basis of geographical locations universe is categorized as follows:

1. North Zone
2. South Zone
3. East Zone
4. West Zone
5. Central Zone

It would have been practically impossible to chose Physicians from different locations of India. Hence to decide upon representative cities, their categorization is done in terms of population of the cities. Categories are:

1. Metropolitan cities (Population over and above one crore)
2. Large cities (Population around ten lakhs)
3. Small cities (Population around one Lakh)

Sampling Frame

A sampling frame may be defined as the listing of the general components of the individual units that comprise the defined population. For this research work the sampling frame consist of five parameters, described as below:

People: The people include all those associated with marketing of pharmaceutical products. Thus, pharmaceutical marketers, retailers, physicians and market experts/consultants were selected. Certain other categories of people who are associated with pharmaceutical marketing such as patients, their relatives, nurses or other Para-medical professionals, drug distributors are excluded from the study

Pharmaceutical firms: It will include those pharmaceutical firms that market pharmaceutical products. Mainly allopathic drug marketers were focused upon. But Ayurvedic drug marketers too were included as the physicians prescribe their products

Products: The product includes pharmaceutical products. The Pharmaceutical products are broadly classified as Bulk and formulations.

Bulk drugs are medicinally effective chemicals whereas Formulations refer to the dosage forms such as Tablets, Capsules, Syrups, and Injections etc. in which form a medicine is marketed and administered. Formulations can be further classified as Prescription drugs and over the-Counter (OTC) drugs. Only formulations were considered as universe in the product category with a clear emphasis on prescription product

Activities: Activities include, the marketing activities for finished goods inventory management, forecasting, order processing, accounts receivable, sales decisions, maintaining sales databanks, restructuring of sales territories, receipt and analysis of daily reports, sales call made by MR to physicians, market segmentation, training & Development of sales persons, detailing, sample distribution, customer relations management, direct-to-consumer communication, drug compliance, launch of new products, retail-marketing, prescription writing and activities where information technology is playing or has the potential to play role.

Tools of Information Technology: Tools of information technology include those tools that emerged with computers from 1985 and onwards.

Sampling Method

Regardless of the method used to obtain the primary data, the researcher has to decide whether the information is to be obtained from every unit of the population under study or only a portion of the population will be used. Collection of data about each and every unit of the population is called *census method.* Approach where only a few units of population study are considered for analysis is called *sampling method.* It is apparent that for the present study because of severe time, money and geographical constraints, census method was not feasible. Therefore, sampling method is the only option left with the researcher. Further there are two broad methods of sampling namely probability and non-probability. As researcher has some knowledge of pharmaceutical industry, use of non-probability sampling rather than probability sampling method, is considered to be more appropriate. Sampling methods adopted are as follows:

Sampling Method for Selection of pharmaceutical firms: Non-probability methods are of three types, namely Judgment sampling, Convenience sampling and quota sampling. A combination of Judgment and Convenience sampling techniques was decided upon for this study. Initially a tentative list of firms from each of large, medium and small categories was drawn using judgment-sampling method. From this tentative list a final list was prepared based on convenience and their accessibility of the researcher.

Sampling Method for Selection of Cities for Conducting Physicians' Survey: To conduct physicians' survey cities are decided by using convenience sampling method. The list of cities selected are shown in Table 11.

Table 11: List of Cities Selected for Conducting Physicians' Survey

S.No.	Category of City	Names of Cities Selected
01	02	03
1	Metropolitan cities	Mumbai and Kolkata
2	Large cities	Raipur and Bilaspur
3	Small cities	Gangtok

The physicians from these cities are selected by a method that combined random sampling and convenience sampling. List of physicians is obtained from telephone directories and thereafter physicians are chosen on random basis. Thus, only the physicians, whose names and telephone numbers are available, are contacted. The sample is expected to be near national average as care has been taken to take geographical and demographic aspects into consideration to the extent possible. Money and time constraints have not permitted a more extensive/intensive schedule.

Sampling Method for Selection of Physicians who are Reluctant to Meet MRs. Physicians under this category are selected from cities mentioned earlier using the same method. Such physicians are identified on the basis of information collected from Medical Representatives of different companies.

Sampling Method for Selection of Experts for Online Information: The queries floated in online forum automatically reach to each of its member.

Understandably only a few responded at a time. Other experts not part of the forum, are selected on the basis of information about their expertise and contact email address/phone numbers.

Observational Units

Industrial Units: The names of industrial firms selected for the survey are shown in Table 12. Indian pharmaceutical industry is overwhelmingly Mumbai-centric hence, selection of seven industrial firms from Mumbai is unbiased.

Table 12: List of Pharmaceutical Firms Selected for the Study

S. No.	Geographical Zone	Name of Selected Cities	Name of Selected Pharmaceutical Firm
01	02	03	04
1	North Zone	(a) Delhi (b) Saharanpur	(a) Ranbaxy (b) Indian Herbs
2	South Zone	Chennai	Orchid Pharmaceuticals
3	East Zone	Kolkata	Franco-Indian Pharmaceuticals and Baidyanath
4	West Zone	Mumbai	Pfizer, Aventis, Organon, Khandelwal, Kopran, Lupin and Almet Corporation
5	Central Zone	Raipur	Transflex

Physicians' Survey: The observational units for the physicians' survey are shown in Table 13.

Table 13: Observational Units: Details for Physicians' Survey

S. No.	Name of Place of Survey	No. Of Respondents
01	02	03
1	Mumbai	80
2	Kolkata	80
3	Raipur	30
4	Bilaspur	30
5	Gangtok	20
	TOTAL	**240**

Survey of Physicians' who are Reluctant to Meet MRs: The observational units for survey of Physicians' who are reluctant to meet MRs are shown in Table 14.

Table 14: Observational Units: Details for Survey of Physicians' who are Reluctant to Meet MRs

S.No.	Name of Place of Survey	No. of Respondents
01	**02**	**03**
1	Mumbai	30
2	Kolkata	30
3	Raipur	10
4	Bilaspur	10
	TOTAL	**80**

Sources of Data

There are two types of data available to a researcher, namely primary data and secondary data. Primary data are collected by researcher himself, whereas, secondary data are those data that are collected by earlier researchers and are of some use to a researcher. In the present study the researcher has made use of the both - secondary and primary data. Since the present study is first of its kind and earlier research works are not available, therefore, the researcher has mainly relied on the primary data. However, the researcher has also exhausted the secondary data sources. He has tried his best to use the secondary data in an effective manner to understand the frame, components and parameters of the problem undertaken.

The major secondary data sources which are used by the researcher are reports, records, journals, state publications, professional publications, individual firm publication, directories, books, magazines, newspapers, websites etc.

The researcher has also used primary data in order to fill the gaps and deficiencies and to update secondary data. Sources of primary data for this study include:

1. Data collected by researcher by visiting the pharmaceutical companies, retailers and physicians, using observation method.
2. Data collected by discussion held with pharmaceutical market expert for their opinions, suggestions and information using Online Discussion forum.
3. Data collected by making queries over telephone or email from professionals and experts in the field of pharmaceutical marketing.
4. Data collected using interview schedule as an instrument of primary data collection. For this purpose, following three different structured interview schedules were designed:
   a. *Interview Schedule-I* for collecting data from marketing executives of pharmaceutical firms
   b. *Interview Schedule-II* for collecting data from physicians
   c. *Interview Schedule-III* for collecting data from physicians who are reluctant to meet MRs.

   All the three interview schedules contain dichotomous, multiple choice and open-end questions
5. Data collected using intensive unstructured interviews (personal / telephonic / online) held with marketing executives of Aventis and Pfizer.

Data Collection Methods

For this research work, following methods of data collection are used:

Secondary Data

The list of journals and magazines and other secondary sources of information for this study is presented in **Appendix X**. Secondary information is collected online and also from the libraries of Sikkim Manipal Institute of Technology, Majhitar, Sikkim, Sikkim Manipal Institute of Medical Sciences,

Gangtok, Sikkim, Guru Ghasidas University, Bilaspur, Chhatisgarh and Department of Management Studies, Indian Institute of Technology, Bombay.

Primary Data

1. Data collected using observation method: The researcher dwelled into his own experiences with pharmaceutical industry that dates back 22 years in order to develop a holistic understanding of marketing of pharmaceutical products. Whatever gaps are found in personal experiences are duly filled via literature survey and getting information from friends and ex-colleagues working in various pharmaceutical organizations.

2. For collecting data by holding discussions with Foreign and Indian pharmaceutical market experts to seek their opinions, suggestions and information using Online Discussion forum the researcher joined an exclusive e-mail networking community organized by Pharma Marketing Network of pharmaceutical marketing professionals and experts. Pharma Marketing Network is owned and operated by VirSci Corporation; a pharmaceutical marketing best practices consultancy and Communications Company, which was established in 1995 by John Mack. The application for membership was made at the end of November 2003 and became a member on 28th December 2003. Email conforming acceptance of researcher's membership has been attached as **Appendix I**.

   The Pharma Marketing Forum is an exclusive e-mail networking community of pharmaceutical marketing professionals and experts. The forum operates via the PHARMA-MKTING listserv. Members of the Forum are employed at a wide array of pharmaceutical manufacturers, medical communications companies, marketing service providers, advertising agencies, and academic institutions. Many members are recognized experts in the field of pharmaceutical marketing and hold important positions within their organizations.

Forum members benefit from the experience of other members by posting queries to the list, sharing information with other members, or by merely "lurking" or reading e-mail communications from other members. The Pharma Marketing Forum offers members an excellent opportunity to network with other pharma marketing professionals via the convenience of e-mail. Members ask other members for advice, help finding information and online resources, and generally share knowledge with other members. The list of experts consulted is attached as **Appendix II**. Details of online correspondences are shown in **Appendix III.**

3. For collecting data making queries over telephone or email from professionals and experts in the field of pharmaceutical marketing experts from India, US and Australia are contacted. Also other organizations/individuals too provided valuable primary information online to complete this research work. Their names and contact details are shown as **Appendix XI.**

4. For collecting data from marketing executives of pharmaceutical firms the researcher approached Mr. S. D. Joag, Secretary, Indian Pharmaceutical Association for a certificate recommending support for the research work undertaken. Copy of this certificate is attached as **Appendix IV**. It may be mentioned here that without this certificate the work would have remained incomplete.

   Having obtained the certificate the researcher approached executives of pharmaceutical companies with a pilot interview schedule. However it was realized that marketing experts were unable (mainly for past data) and unwilling (for certain sensitive current data) to share information. Hence the researcher revisited the companies with a revised interview schedule. The list of companies (and their contact details) that are visited is shown as **Appendix V**. The list of company representatives that were interviewed has been shown as **Appendix VI**. A copy of the revised interview schedule is attached as **Appendix VII**. Wherever possible an effort is made to crosscheck the information that was collected.

5. For collecting data to understand preparedness and willingness of physicians to use IT tools, physicians were approached with interview schedule-II. Copy of Interview Schedule-II is attached as Appendix VIII. Telephonic interviews are held to collect required information. This is done to have a holistic comprehension of strategies adopted by pharmaceutical organizations.

6. Interview Schedule-III (shown as **Appendix IX**) is designed to understand the willingness and ability of physicians not meeting MR or meeting them rarely/selectively, for online communication with pharmaceutical companies. The physicians are identified from MR of various companies. Telephonic interviews are held to collect required information

7. Further data was collected far by holding several sessions of intensive unstructured interviews with marketing executives of Aventis and Pfizer. These companies are chosen as they were found, during previous interactions, to be using information technology for marketing of pharmaceutical products extensively and in a sophisticated manner. The interviews are personal, telephonic as well as online. This information is compared and discussed with the online forum mentioned earlier. This helped in putting the global view.

8. Case studies have been a time tested research methodology. For this research work also following case studies are collected as part of primary data and are used to understand the implications of applying IT tools on marketing Pharmaceutical products:

   a. Case study for launching a new product (Arava) by Aventis.

   b. Case study of e-Detailing as a Supplement to Sales Effort

   c. Case study on how Internet made possible the study of Nail-Patella, an extremely rare inherited disorder.

   d. Case study of Orphan Medical Corporation to reach orphan drugs to Cambodia within 48 hours.

To assess the appropriateness and originality of the work being done, two papers based on the findings of this work have been presented at national and international level conferences and another three papers have been published in indexed journals. Details of papers presented and published are shown in **Appendix XII.**

Analytical Methods

The data that is collected from a survey needs to be analyzed and interpreted to draw out meaningful conclusions. Analysis is the process of placing the data in an ordered form, combining them with existing information, and extracting meaning from them. Interpretation is the process of relating ~~various bits of new~~ information to other existing information. A large number of techniques are available for analyzing data. As the data generated from this research work is not suitable for statistical analysis hence, the researcher relied upon two simple analytical techniques namely *Cross Tabulation* and *Percentage*. The process of cross tabulation involves placing the collected data into tabular form so that their true meaning can be extracted. Percentage is also a useful tool as it reduces every thing to a common base and thereby allows meaningful comparisons to be made. The findings are presented as Graphs, Tables and Diagrams.

Hypotheses

Because of the immense possibilities provided by Internet and other information technology tools many new business models will be tried – some may succeed; some others may not do as well. Information technology paraphernalia offers a wide spectrum of opportunity for the creative and strategic thinker these days. It will be important to pick up on strategies others are using and how they work out. It will be equally as important to understand the trends of the day in order to help create the changes rather than be left behind.

On the basis of this research work and after making analysis of the data collected for the study, it is expected that following hypothesis may be accepted or rejected:

1) Strategies adopted by pharmaceutical industry using information technology have not been significantly effective in marketing their product.

2) Extent of success in using information technology in marketing pharmaceutical products is low as compared to failure.

3) There are no business models, which may be tried, in the near future for marketing pharmaceutical products.

4) There are no business opportunities available to different health care providers using information technology for marketing pharmaceutical products.

5) Returns of using information technology in marketing pharmaceutical products are low as compared to risk and dangers.

There are two premises on which the hypotheses of this research work is based, they are as follows:

1. According to *Philip Kotler,* Internet revolutionized marketing of certain products like, Books, Music, Software, Air ticket, Video and Hotel Reservations.

   It has not been very successful with other products. What is common between these products where marketing today is overwhelmingly Internet oriented? All these products or services are not physical – they are digital in nature and have bits as their unit. These, therefore, can not only be ordered instantly as any other product can be, but can also be delivered instantly over internet, Thus, transcending all barriers enacted by time and space.

   For the purpose of discussion the products and services therefore can be categorized into two broad groups namely, Bits and Atoms.

   Bits represent those products and services that are digital in character and Thus, can be delivered online. Atoms, on other hand, represent products that have a physical existence and Thus, can not be delivered over internet and have to be distributed through traditional media and

channels and Thus, are subject to the constraints posed by time and space.

Pharmaceutical products fall under "atom" category and Thus, are necessarily delivered using time-honored distribution methods. Thus, their marketing is not expected to be influenced substantially by the revolution brought in by information technology.

2. The other premise is based upon the inherent nature of pharmaceutical products. Health issues are taken seriously Thus, invite maximum caution and restriction by the society. The ethical dimension of its products, therefore, puts pharmaceutical industry in a special category. The risk involved in the use of pharmaceutical products has important marketing implications. The pharmaceutical industry, therefore, is understandably and justifiably a conservative industry. The human dimension and personal interaction between physician-patient-pharmacists is sacred and cannot essentially be replaced with an efficient but impersonal entity such as information technology.

It will be worthy to mention that the researcher can not apply suitable statistical methods, to test the hypotheses formulated for this work, owing to three following obvious reasons.

1. Data collected is variegated in nature. It has many combinations and large number of parameters. Suitable statistical techniques to test hypotheses under such conditions are not available.
2. Moreover, the parameters are related to different aspects and different periods of time.
3. The responses of survey are both subjective and objective.

Limitations of the Work Undertaken

This research work is not free from limitations as happens with all research work. Despite best efforts of researcher this work sufferers from certain limitations. They are as follows:

a) While collecting information from pharmaceutical marketers, structured and unstructured interview method is used. As a constraints:

i. Only a small fraction of sample universe could be studied. Cost and time constrains would have made a larger sample size unmanageable.

ii. There remains a possibility of the bias of researcher as also that of the respondents.

iii. Data may not be adequate also because high-level marketing executives are not easily approachable.

iv. For a complete and uniform collection of information it was important to recall upon the respondents many times. Though modern information technologies made it possible, quick and convenient, yet, sometimes recalls were not possible.

b) For collecting information from physicians telephonic interview method is used, consequently:

i. Survey was restricted to respondents having telephone facilities.

ii. Survey was not intensive.

iii. Respondents had not much time for considered answers.

c) As has been mentioned earlier a new interview schedule, that did not seek specific and quantitative details had to be prepared after the pilot survey had showed that marketing executives were unable (past data) and/or unwilling (present data) to share data. Therefore quantitative data could not be collected.

d) In the absence of any worthwhile quantitative data, appropriate statistical techniques could not be used for making interpretation and drawing inferences. Effort was made though, to quantify the beliefs using opinion survey techniques.

e) The research work involved comprehending an extremely dynamic and multifaceted reality. The world of pharmaceutical marketing is undergoing massive transform. The evolution of application of information technology is not yet complete. It will take another decade for a clear picture to emerge. It will change because of the new patent rights, arrival of the era of big-time medical insurance, emergence of

new dimensions of health, changing perceptions and capabilities of consumer also. Yet it is expected that a similar research work using future tools of information technology will verify the findings of this work as technologies may change but nature and characteristics of information remains same.

Profile of the Companies

Profile of the companies that were studied for this research work is as follows:

I. Kopran

Promoted by the Parijat Enterprises Kopran is currently an integrated health care company. Kopran has used research-based technology to contribute towards total health-care.

The company started modestly as a Semi Synthetic Penicillin (SSP) player and expanded to become the largest SSP Player in India with an annual SSP facility of over 1200 tones per annum.

Its products include:

- **Anti-hypertensives -** Atenolol, Amlodipine, Atorvastatin
- **Macrolides** – Roxithromycin, Clarithromycin, Azithromycin
- **Cephalosporins -** Ceftriaxone Sodium Sterile, Ceftotaxime Sodium Sterile

II. Pfizer Ltd

Pfizer Ltd is a leading player in the domestic formulations market. Its main therapeutic segments are vitamins, cough expectorants, Non Steroidal Anti-Inflammatory Drugs (NSAIDs), protein supplement, cardiovascular, anti-infective and vaccines. Pfizer is renowned for its unparalleled marketing prowess, reflected by the fact that two of its products are perched right on top of the list of the best selling pharmaceutical brands in India.

Pfizer is rated amongst the top 10 formulations company in Indian pharma industry. Over the years, Pfizer has transformed into a marketing company. Pfizer has 8 brands out of its portfolio of around 30 brands which are ranked

amongst India's top 300 brands in the industry. Its top brands namely *Becosules* and *Corex* are market leaders in respective therapeutic segments.

The Pfizer Global Research and Development (PGRD) unit in India, with its two departments-Clinical Study Management and Monitoring (CSMM) and Biometrics, has consolidated its position as a quality service provider to PGRD in the US. The departments have been on a steep growth curve, with the current total strength of around 55.

III. Aventis Pharma Limited

Aventis Pharma Limited is the second largest pharmaceutical multinational company in India. In 2003 its sales turnover stood at Rs. 6157 millions and its market share was 2.9%.

The Aventis product portfolio in India is in synergy with the organization's global strengths in seven key therapeutic areas. These are anti-infectives, metabolism, cardiology/thrombosis, respiratory, CNS, bone/joint and oncology. In six of its therapeutic areas, Aventis leads the market in India.

In each of these the thrust is on consolidating existing markets, penetrating new markets, offering high quality support to care providers and keeping patient well being at the heart of all business efforts.

The company has six regional offices at Mumbai, Calcutta, Delhi, Hyderabad, Lucknow and Chennai and two state-of-the-art manufacturing sites at Ankleshwar (active pharmaceutical ingredients & formulations) and Goa (formulations). Incorporating the latest designs and processes in manufacturing, both sites has been identified as potential global sourcing units

IV. Organon India

Organon is a global leader in the creation of innovative prescription medicines for gynecology, mental health and anesthesia - products that contribute to the health of people and their quality of life. It is a global company with a history of 36 years of rich experience in the Indian market.

Organon, during its journey across the world reached the Indian shores in 1961. The subsequent years witnessed consistent growth. This growth called for an independent identity for the organization. In 1967, Organon India was established with its Headquarters at Kolkata with all India operations. In 1983 it was renamed as Infar India. Back again in 2002, it has been renamed as Organon India, when its parent company Organon NVO obtained Government of India approval to increase its shareholding in Infar to 100% through an 'open offer' to the existing shareholders. Today, its corporate headquarters is located in Mumbai

Organon India strives to serve its customers with its products and services in the best possible way. Its growth comes from an optimal combination of organic and inorganic business opportunities. They plan to serve the Indian market with their core therapeutic field in reproductive medicine, psychiatric medicine, anesthesia as well as India's specific therapeutic categories that help their customers, and in turn help the patients.

As a global pharmaceutical company committed to innovation and high quality products, it is amongst the leading companies in their areas of expertise. These areas include contraception, menopause & andropause, fertility, mental health, thrombosis and anesthesia.

V. Ranbaxy Laboratories Limited

Ranbaxy Laboratories Limited, is the largest Indian Pharmaceutical organization that manufactures and markets bulk drugs, generics, branded pharmaceuticals and active pharmaceutical ingredients. Globally also, it is placed along with the top ten generic companies. Its products are sold in over 100 countries. In fact its exports account for 78% of its total sales. Its manufacturing operations are spread over seven countries.

Ranbaxy has modeled itself in the image of US and European Pharmaceutical multinationals and has substantial international portfolio of affiliates, joint ventures and representative offices across the globe with JV's/ subsidiaries in USA, UK, Germany, France, Spain, Ireland, Netherlands, India, China, Brazil, South Africa, Japan etc. Recently with the acquirement

of RPG (Aventis) SA, this Indian Giant has made its place amongst the major generic companies in Europe in general and France in particular.

This drive to be an international player has not affected its focus on Indian Market. It has a strong brand marketing team and distribution network in India. Recently it is toe holding the expanding herbal market also and has launched three herbal brands under New Age Herbals range.

Ranbaxy has established state-of-the-art multi-disciplinary R&D facilities at Gurgaon (near New Delhi), India. It is one of the largest investor on R&D in the Indian pharmaceutical industry with an R&D spend of 7% of its sales during 2004. Its major research drives are in the field of Urology, Anti-infectives, Respiratory, Anti-inflammatory and Metabolic disorders segments.

It has no intention to give up its foothold in generics market but to sustain its growth, which is around 18-20% now, it has invested on NCEs (New Chemical Entities) for long term value building and on NDDS (Novel Drug Delivery Systems) in the medium term

Together with the commitment of a 10,000 strong multicultural workforce, Ranbaxy continues to aggressively pursue its strategies to become a Research- based International Pharmaceutical Company.

VI. Lupin Laboratories Ltd

Lupin is among the few companies from India with global scale manufacturing facilities that conform to the world's best quality standards. Nine of their facilities are approved by the USFDA; two by the UKMCA

Its portfolio of over 80 finished products primarily focuses on anti-TB, anti-infectives, NSAIDS (non-steroidal anti-inflammatory drugs), and cardiovasculars

Some of its most prescribed brands include *Rcinex*, *Rcin*, *Ceff*, *Combutol*, *AKT-4*, *CZ3*, *Odoxil*, *Aptivate*, *Cetil* and *Lipril*.

VII. Orchid Chemicals & Pharmaceuticals Ltd

Orchid Chemicals & Pharmaceuticals Ltd. is an integrated pharmaceutical major (headquartered in Chennai, India) with diversified competencies in bulk drugs, formulations and drug discovery, with a strong orientation

towards the advanced regulated markets. A snow-balling momentum in establishing new facilities both in bulk drugs and formulations for the regulated markets, securing approvals from international regulatory authorities and generating intellectual property has resulted in a strategic transformation in Orchid's business profile.

Orchid has been recognized as the only company in the Indian Pharmaceutical industry to record remarkable growth in a decade of operations. Orchid has since its inception grown ten-fold in physical output terms and fifteen-fold in value terms signifying an exciting growth journey.

Orchid's world-class manufacturing facilities for bulk actives, including the latest US FDA approved blocks, are located in Alathur, a little away from Chennai. Orchid also has dedicated manufacturing facilities for nutraceutical bulk active ingredients and cephalosporin and non-cephalosporin formulations in Alathur. A State-of-the-art US FDA compliant bulk actives manufacturing facility is also located at Aurangabad, near Mumbai.

Orchid has also commissioned a pre-clinical toxicology and pharmacology centre, located in the R&D campus to aid pre-clinical trials.

Orchid is one of the few pharmaceutical companies of its size and scale to have received the ISO 9001:2000, ISO 14001 and OHSAS 18001 certifications for its world-class quality, environmental management systems and Operational Health & Safety systems respectively.

VIII. Franco-Indian Pharmaceuticals Pvt. Ltd

Franco-Indian Pharmaceuticals Pvt. Ltd., is one of the major players in the Pharmaceutical Industry in India. This reputation is due to the stringent and high quality standards maintained in the production processes at the manufacturing units, and continuous research conducted in the laboratories in pursuit of excellence.

Franco-Indian Pharmaceuticals has always given prime importance to Quality Control and therefore purity, efficacy, standardization and elegance have been the fundamental principles on which products are manufactured.

In order to have larger manufacturing capacities with an advanced technology and at the same time giving prime importance to Quality Control, Franco-Indian Pharmaceuticals established three more Associate Companies with separate Manufacturing Units

IX. Khandelwal Laboratories Pvt. Limited

Khandelwal Laboratories Pvt. Limited (KLab) was founded in 1945 and is in the business of manufacturing and marketing of speciality pharmaceutical formulations, niche APIs, chiral intermediates, Novel Drug Delivery Systems and Research. KLab is a pioneer and leader in Oncology and pain and spasm management.

Their sales team focuses on Gastroenterologists, General Physicians, General Surgeons, Gynecologists, Orthopedic Surgeons and Pediatricians. Klab's products are distributed nationally through 30 distributors, 1,000 stockiest and 75,000 pharmacies

X. Shree Baidyanath Ayurved Bhawan Pvt. Ltd.

Shree Baidyanath Ayurved Bhawan Pvt. Ltd. (Kolkata), popularly known as **Baidyanath,** is the acknowledged leader of Ayurvedic know-how. The Company has played a pioneering role in re-establishing ancient knowledge with modern research and manufacturing techniques.

With a vision to introduce new-age herbal medicines that are ayurvedic, herbal, probiotics, antioxidants, nutraceuticals and phytonutrients Goodcare Pharma Pvt Ltd was established. In Goodcare pharma a group of talented R&D Scientists are constantly endeavoring to implement all advanced pharma techniques so that the ancient age old wisdom of *Ayurveda* is firmly validated by the latest techniques of modern science

XI. Indian Herbs

The Indian Herbs, an ISO 9001 certified organization, has added a modern dimension to traditional herbal medicines and has made them available for humans and animals. Founded in 1951, the flagship company Indian Herbs Research and Supply Co. Ltd. was well underway even before the interest in herbal remedies worldwide began. It is located in Saharanpur, U.P.

Its product categories include, Immune-Potentiator, Anti-arthritic, Anti-asthmatic, Prompt and Sustained Action Liver Tonic, Cardiac Tonic and Anti-oxidant, Renoprotective, Nephrogenic and Renal Tonics.

XII. Almet Corporation

Almet Corporation is a regional company with head office located in Mumbai. It began operations in early 1990s. Initially they operated in Mahrashtra only and now have begun to cater the markets of Gujarat, Madhya Pradesh, Chhattisgarh and other states adjoining Maharashtra. They prepare tablets and parenteral preparations. Their products categories include Antibiotics, cough syrups etc.

XIII. Transflex

Transflex is a small pharmaceutical firm located at Raipur, Chhatisgarh. It has a turnover less than rupees one crore. It was established more than 35 years ago and caters to a niche market. They only produce liquid Anima in 100 ml packs. Being Niche marketers they have no sales force and they distribute their products through a few chosen distributors located nationally.

CHAPTER - THREE

OBSERVATIONS, ANALYSES AND FINDINGS

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This chapter is devoted to observations, analyses and findings related to role of information technology in marketing pharmaceutical products. These are presented under five heads, that is, general observations and components of marketing-mix, namely product, price, place and promotion.

1. General Observations

Trends of Investment in Information Technology in Indian Pharmaceutical Industry

Information Technology (IT) is the buzzword today. It indeed has changed the way we communicate, learn, seek better health, entertain ourselves, find employment, work, and socialize. Organizations today run on information. *Philip Kotler* observes that the new economy is based on management of information made possible by digital revolution. Information has a number of attributes. It is infinite and can be infinitely differentiated, customized and personalized. It can be dispatched to a great number of people who are on a network and it can reach them with great speed up to the extent that the information is public and accessible. People are better informed; more empowered and are making better choices.

Pharmaceutical marketing, despite sharing many dimensions of marketing of consumer goods, industrial goods and services, still has distinct attributes, approach and even an identity of its own. It has evolved with a great sophistication. Pharmaceutical industry is a rich and a powerful sector that hardly any one dares to ignore. It is most advanced in terms of technological growth still it is one of the most conservative business entities. It observes extreme care while adopting a new concept, and adopts only when absolutely sure of its benefits and knows that no hidden risks are involved. Health and product associated to it are a sensitive issue for individual and the society. Since pharmaceutical products deal with life and, in

consequence, with death, they are expected to be marketed with due sincerity, gravity, respect and care.

For the afore-mentioned reasons, pharmaceutical industry is slow to respond to the promise of Information Technology also. The pace of automation in pharmaceutical industry is observed to be very slow. Table 15 provides a comparative data on extent of IT automation in different industrial sectors:

Table 15: Comparative Data on Extent of IT Automation in Different Industrial Sectors

S. No	Factor	All	Banking and financial services	Insurance	Software BPO	Pharma	Manufacturing	Tele Communication	Automobile
01	02	03	04	05	06	07	08	09	10
1	Average no. of Personal Computer	2074	5143	2363	1928	499	781	12,394	581
2	Number of Employee/PC	8	7	3	2	14	10	3	5
3	IT Spendings per person (In Rs Lakhs)	0.35	0.35	0.48	0.72	0.051	0.16	0.22	0.12
4	IT Spending as % of Revenue	1.9	3.8	3.1	3.5	0.9	1.1	9.1	0.2

Source: DQ-IDC India Survey: Mega Spenders DQ Week May 3, 2004

From the Table 15 it is obvious that the overtures of Pharmaceutical industry with IT are low – lower than the average. This observation is consistent with the findings of the report, entitled *Indian Pharmaceutical Cos. Still Lag Behind in IT Use,* that stated that Pharmaceutical companies in India are still lagging behind in using IT to transform their businesses. However, it is also true that in IT-adaptation, pharmaceutical industry has made substantial progress and though it was lagging behind considerably in the beginning, it is catching up fast. Pharmaceutical companies around the world are now taking keen interest in investing in IT. This can be shown by the following major events collected over internet, from the company websites.

1) Merck invested more than 100 million dollars in online health technology

2) Aventis acquired *Mydoc online Incorporation.*

3) The site launched by Aventis for *pharmatoid arthritis* care acknowledged as an exemplary effort in community medicine.

4) Pfizer launched *cancer resources online.*

5) Eli Lily invested 50 million dollars on online health technology.

In India, Pharmaceutical firms are also showing a growing affinity for IT solutions. The survey for this research work (Interview Schedule-I) reveals the investment pattern as under.

Extent of Investment in Information Technology

Pharmaceutical companies are investing in IT. Extent of investment in companies that were studied is given in Table 16.

Table 16: Extent of Investment in Information Technology

S. No.	Extent of investment in IT	Companies
01	02	03
1	More than Rs. 25 Crores	Pfizer, Organon, Aventis and Ranbaxy
2	Rs. 10 - 25 Crores	Orchid Pharmaceuticals, Kopran, Lupin
3	Rs. 5 - 10 Crores	Franco-Indian Pharmaceuticals, Khandelwal Laboratories, Baidyanath, Indian Herbs
4	Less than Rs. 5 Crores	Almet Corporation, Transflex,

It is evident from the Table 16 that four companies that have invested heavily in IT are MNCs. This could be so because they have the required finances to invest as well as their operations are wide and dispersed. They have also a large sales force and established market. Other companies are relatively conservative in investing in IT. Regional companies like Almet and Transflex of course have invested less but looking at their areas of operation the investment may be considered as sufficient and adequate. It is also observed that other companies might not have invested in information technology but in the near future they will do so.

Projected Investment in IT for Financial Year 2004-05

Responding to an enquiry about the anticipated increase in investment in it for the year 2004-05, the marketing executives of pharmaceutical firms unfold the facts which are summarized in Table 17.

From the Table 17 it is evident that projected investment in IT is not uniform across the industry. Orchid, a known progressive company projects higher investment. This is in tune with their resolve to automate their operations.

Table 17: Projected Increase in Investment in IT for the Year 2004-05

S. No.	Anticipated Increase Over the Previous Year	Companies
01	02	03
1	More than 15%	Orchid Pharmaceuticals
2	10 - 15%	Organon, Pfizer, Aventis, Lupin
3	5 - 10%	Ranbaxy, Khandelwal Laboratories, Baidyanath, Indian Herbs, Almet Corporation
4	Less than 5%	Franco-Indian Pharmaceuticals, Transflex

Large and progressive organizations, such as Pfizer, Ranbaxy and Aventis have invested heavily in past. They do not project high investment in IT, because, as Dr. Ranjit Barshikar of Ranbaxy informed that IT investment has certain milestones. Automation is not a gradual process but an incremental process.

Stage of IT Implementation

Implementation of IT in pharmaceutical companies is evolutionary in nature. The reason being, IT involves high investment and consecutively high risk. Those involved, consequently, have to necessarily pass through a learning process. Rate of failure of IT solutions reflect that IT definitely entails development of a particular mindset. Thus, any organization planning to embrace IT has to pass through four noticeable stages. They are:

1. Stage I: This stage is known as the ***Functional Stage***: The very first IT endeavor involves automation of various functions of the organization. Traditionally, it begins with automation of administrative and accounting functions. In the later part of this stage, data collected separately at regular intervals of time, is integrated. Most computer systems at this stage are *stand-alones*.

2. **Stage II**: This is also known as the ***Integrated Stage:*** By this time companies begin to appreciate the importance of networked computer systems that allow them to take an integrated view to address their IT needs by effecting communication between different functions.

3. **Stage III:** This stage is also referred to as ***Optimized Enterprise Stage.*** Apart from having integrated its functional application, this stage is also characterized by optimization of operations using applications that take a holistic view and encompass comprehensive data analysis techniques - such as predictive modeling, linear programming and regression analysis etc. This helps in making right decisions timely. It also addresses problems such as data-inconsistency, data redundancy and data flooding.

4. **Stage IV:** This is referred to as ***Extended Enterprise Stage***. This is by far the most advanced stage of automation. Companies having graduated to this level, begin to utilize advanced data analysis techniques such as data mining to identify patterns and problem areas that otherwise is not possible with traditional tools. Connectivity is extended to trading partners (hence the name extended enterprise stage).

Table 18 provides the stage of IT implementation in companies under study.

Table 18: Stages of IT Implementation

S. No.	Stage	Companies
01	**02**	**03**
1	Functional Stage	Transflex
2	Integrated Stage	Baidyanath, Indian Herbs, Almet corporation, Franco-Indian Pharmaceuticals, Khandelwal Lab.
3	Optimized Enterprise Stage	Lupin*, Orchid Pharmaceuticals*, Kopran
4	Extended Enterprise Stage	Pfizer, Aventis, Organon, Ranbaxy

*Note:*Both are in the process of adopting the Fourth stage.*

Table 18 shows that companies such as Ranbaxy, Pfizer and Aventis, that have invested heavily in IT are at the highest level of automation. Lupin and Orchid have reached the second highest level while smaller pharmaceutical firms have undertaken automation at much smaller level.

Average Annual Budget for IT

Almost all companies indicated that investment in IT is carefully budgeted and remains at about 1% of the total sales revenue. It is more or less steady. When investments are made in new application areas, there is a sudden jump in the investment figures.

Investment Pattern In Different Components of IT

Investment in various components of IT differs from company to company. This difference is shown in Table 19. The figures in the table indicate the percentage of the total investment in IT in respective Companies.

Table 19: Investment in Various Components of IT

S. No.	Company	Hardware	Software	Connectivity	Services*
01	02	03	04	05	06
1	Pfizer	10-15	10-15	35-40	35-40
2	Aventis	10-15	5-10	35-40	40-45
3	Organon	10-15	10-15	45-50	25-30
4	Kopran	10-15	15-20	40-45	25-30
5	Lupin	10-15	15-20	34-40	25-30
6	Ranbaxy	10-15	10-15	40-45	35-40
7	Orchid	10-15	15-20	40-45	25-30
8	Franco-India	55-60	10-15	15-20	15-20
9	Almet	45-50	20-25	15-20	15-20
10	Khandelwal	50-55	15-20	15-20	15-20
11	Baidyanath	40-45	15-20	20-25	15-20
12	Indian Herbs	35-40	20-25	15-20	20-25
13	Transflex	70-75	5-10	0-5	10-15

Note: Includes Maintenance*

The investment figures shown in Table 19 indicate different components and a pattern. Those companies that are at a higher stage of evolution (In stage III or IV) have invested less comparatively in hardware and software and

more in connectivity and services. Whereas the organizations that are at a lower stage of adoption (Stage I & II) have invested comparatively more in Hardware and software component. Thus, we can interpret that initial investments in IT are hardware-centric, whereas at the second stage they become software-centric and in the third stage they are network-centric.

Automation in Functional Areas

The areas that are automated using IT tools are shown in Table 20.

Table 20: Automation in Functional Areas of Pharmaceutical Organizations

S. No.	Functional Area	Pfizer	Aventis	Organon	Lupin	Ranbaxy	Orchid	FrancoIndia	Almet	Khandelwa	Baidyanath	Indian Herb	Transflex	Kopran
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
1	Office Administration	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2	Accounts	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3	Invoice Generation	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4	Distribution	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
5	Enterprise Application Integration	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
6	Enterprise Resource Planning	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	Y
7	Supply Chain Management	Y	Y	Y	N*	Y	N*	N	N	N	N	N	N	N
8	Sales Force Automation	Y	Y	Y	N*	Y	N*	N	N	N	N	N	N	N
9	Electronic Data Capturing	N	N	N	N	N	N	N	N	N	N	N	N	N
10	Training of MR	S	S	S	P	S	P*	S	P	Pl	P	Pl	N	Pl
11	Customer Relation Management	S	S	P	S	P	P	P	N	N	N	N	N	N
12	E-Advertising	Y	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N
13	e-detailing	S	S	P	P	P	P*	P	N	N	N	N	N	P
14	Market Segmentation	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
15	Market Research	S	S	P	P	P	P	N	N	N	N	N	N	N
16	Drug Discovery	N	N	N	Y	Y	N	N	N	N	N	N	N	N
17	Drug Development	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
18	Territory Restructuring	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
19	Production Planning	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
20	Clinical Trials	N	N	N	N	Y	N	N	N	N	N	N	N	N

Note: 1. Y denotes Yes, N denotes NO, S denotes Substantial, P denotes Partial and Pl denotes planned
*2. * Information received later shows that Lupin and Orchid have automated these operational areas*

Information provided in table 20 shows organizations that have invested heavily in IT have automated more areas of operation than the ones that have made less investment. The table supports the researcher's opinion that automation is evolutionary in nature and improvement is incremental rather than gradual.

2. Product

Launching New Products

New products continue to fail at a disturbing rate. Kotler stated it to be as high as 95%. The future of any pharmaceutical organization is dependent upon the pipeline of new products it plans to launch. Many progressive companies have introduced several new products in 2002. S. Wadwalkar informs that Cipla led in launching of the new products and registered over Rs 29 crores sales from them. It is quite surprising to him to note that many products introduced during 2002 could not get listed in ORG as top 300 products or cross Rs. one crore mark in sales.

S. Wadwalkar gives following reasons for high rate of failure of new products in pharmaceutical market:

i. Over estimated market size;

ii. Long time to launch a product;

iii. Inadequate promotion;

iv. Small market segments;

v. Misleading market growth;

vi. Tall claims;

vii. Poor packaging;

viii. Wrong pricing and

ix. Wrong positioning.

Of these, the first three are believed to have significant effect. The Companies that have made serious investment in Information Technology are using it to launch new products also. Following are the observations to

understand impact of Information Technology on product launch with respect to the first three reasons.

Correct Estimation of Market Size

Information technology has made a perceptible impact in demand determination. Demand estimation has always been a difficult proposition. Forecasting is the art of anticipating what buyers are likely to do under a given set of conditions. Thus, it involves interplay of many variables that defy use of simple mathematical techniques. Today, organizations are using collection of data, systems, tools and techniques, ail assisted by software and hardware together and interpret relevant information and make ~~decisions to take actions.~~ Thus, demand estimation is not only much more accurate but dynamic also. It is possible to forecast frequently taking into account every changing entity.

Reduction in Time to Launch New Product.

Kotler states that reduction in time is significant as success rate of new product is much higher if it is introduced ahead of competitors. A new product should be established quickly, well before the competitors can respond to such a move.

According to Mr. Ramgopal of Aventis India,. "Tools of information technology provided us with the means to achieve such a reduction and also with mindset to be more efficient and competent." Other marketing executives agree that advent of IT has changed the way people look upon challenges posed by the time constraints.

Most of the executives believe that earlier it took 10 to 12 months to launch a new product. This time slab has now shrunk to 5 to 6 months in the recent times.

Proper and Adequate Promotion

Launching a new product is not a simple task. It involves coordinating hundreds of activities and hundreds of people spread over a wide geographical area. Information Technology provides us with means to achieve it. Appropriate and adequate promotion can be realized with the

help of information technology. This can be best understood with the help of a case study as told to the researcher by Mr. C. Ashok of Aventis India.

Launch of Arava - A Drug to Fight Rheumatoid Arthritis.

When Aventis India was to launch Arava, they decided to make use of all their resources in a cost-effective and well-organized manner. By their experience they knew that a successful launch is possible only if the opinion leaders (physicians that are looked upon for guidance and direction by other physicians in matters pertaining to prescriptions of medicines and other related issues) can be convinced of the therapeutic efficacy, advantages and inherent safety of new drug. They, therefore, decided to build their campaign around the opinion leaders.

In the first phase, such opinion leaders were carefully identified as using tools of information technology to segment them in terms of their behavioural traits (over and above the demographic segmentation). This was started quite early in the process to have a strong and long term ties with them. It was communicated to them that they are important partners in this launch and that their honest and sincere opinion about the performance of the drug would be vital for every one involved.

Having done this the company put IT infrastructure into the place to maintain high-quality two-way communication with selected opinion leaders. This was also to keep their activities in focus so as to ensure their keen involvement and earnest participation throughout the launch.

To achieve this, they began to assess Internet as the medium and a web-based software as the solution. They found inherent possibilities and opportunities in this hottest gift of technology. Accordingly they built a solution that had three components:

i. First, to manage on-line focus group

ii. Second one, to manage web-site content

iii. Third one, to manage and deliver detailed programmes.

Having put such an infrastructure in place they began with their campaign. This involved disseminating information to the selected information leaders.

It was ensured that there was no over-flooding of information. Rather the information flow control was passed on to the physicians. Opinion leaders could select information they found interesting. Thus, the physician at their pick could have articles, other literature, clinical data, etc. Special attention was paid to make sure that the information remains appropriate, up to date and helpful. While sharing clinical data, no conclusions were extended to avoid passing on the marketers' bias.

Regular on-line meetings were held wherein the physicians were encouraged to participate. This was done using a centralized web environment. Such on-line group discussions generated finer points and all round views.

The software provided for well-ordered update of the web-site content and online messages. Information could be communicated to a large audience using a single use interface that allowed transmitting of information on segmented basis. This implies that information was customized as per the need of the recipient. The solution also includes built in user and group management tools to uphold centralized control. In addition to it workflow management tools make possible editing, tracking and approval of information by a number of administrators.

The solution also incorporates archival tools that permit old data to be sorted and stored systematically so that if and when needed it could be traced back at the click of mouse.

Such elaborate arrangements successfully overcame the limitations of time and space. They achieved phenomenal interaction at extremely low costs.

The team that launched Arava was well aware that IT is not a panacea that can get rid of all the problems. They comprehended its limitations. With all its blessings IT is no substitute for human touch. Thus, during the entire exercise warm and cordial human contact was maintained with the opinion leaders.

The sales team comprising of important medical representatives was trained well before the launch. They were well acquainted with the product, the competition and other information. Using tools of supply chain management

the product was made available with maximum retailers before the prescriptions were generated. The customers' response was carefully recorded and communicated to the experts for analysis and interpretation. On this feed back micro-selling techniques were communicated to overcome resistance. During this time, the communication link with opinion leaders was kept intact.

The result was an unprecedented success of Arava that has become a major brand for Aventis India.

It is, therefore, observed that information technology is important for launching new products in general and pharmaceutical products in particular. Thus, product launches will be faster and more structured now with the help of IT than earlier However, it also brings out that technology is no substitute for human ingenuity, commitment and warmth.

Drug Compliance

Non-compliance of drugs adversely affects **pharmaceutical markets**. When enquired from the marketing executives of the pharmaceutical firms about the loss of market because of low drug compliance, surprisingly all of them responded in affirmative. Though no estimates are made as yet, but it is suggested that 15-25% of prescribed drugs are not even bought. This results in a huge loss of Market. Moreover, according to market experts, this figure does not include the loss of market due to the disenchantment of the patients with therapy, that is when therapy is not found to be beneficial, patients tend to suffer rather than approach health practitioners.

Loss of Sale Because of Non-Compliance of Drugs

An estimate of loss of market was made during the study. Observations regarding approximate loss of market due to non-compliance of drugs are shown in Table 21.

From the information received from Table 21, it is obvious that loss of market because of non-compliance of drug is significant. An article in Pharma Marketing News indicates that in USA also the annual loss because of non-compliance is estimated to be of $3 billions.

Table 21: **Approximate Market Loss Because of Non-Compliance of Drugs**

S.No.	Company	Loss Of Sale
01	**02**	**03**
1	Pfizer	20-30%
2	Aventis	20-30%
3	Organon	20-30%
4	Kopran	10-20%
5	Lupin	20-30%
6	Ranbaxy	20-30%
7	Orchid	10-20%
8	Franco-India	-
9	Almet	10-20%
10	Khandelwal	10-20%
11	Baidyanath	-
12	Indian Herbs	-
13	Transflex	-

Thus, using Information technology to improve compliance can result in large increases in sales also. Some of the companies could not estimate loss due to non-compliance. Interestingly, the companies that are manufacturing life-style drugs have greater awareness of loss due to non-compliance. This could be because compliance/adherence is always an issue especially in diseases that are largely "silent" or asymptomatic like hypertension or hypercholesterolemia. According to Dr. A. Nair of Lupin, "people take drugs to overcome symptoms and not the disease. Hence medication is discarded when symptoms of disease disappear. But this results in relapse of disease and as the result there is a possibility that patients loose faith in the entire health system. In such cases the loss of market would be even higher."

Improvement in Drug-compliance and Corresponding Reduction in Market Loss Due to IT Tools

Most of the executives of pharmaceutical firms feel that low drug compliance results in lower sales than targeted. They are also hopeful that Information

Technology will definitely come to their rescue to save them from the loss of sales. Through Information Technology, physicians and patients, both can be informed of harmful effects of low drug compliance. Informed patient will buy required pharmaceutical products as prescribed to him by the physician. This will, in turn reduce the loss of market due to low drug compliance. Therefore, IT has helped the pharmaceutical industry in improving the drug compliance and correspondingly reducing the market loss. The same trend will continue in future also. The related observations are shown in Table 22.

Table 22: Improvement in Drug-compliance and Corresponding Reduction in Market Loss Due to IT Tools

S.No.	Company	Improvement In Compliance And Sales (Present)	Improvement In Compliance And Sales (Future)
01	02	03	04
1	Pfizer	Yes	Yes
2	Aventis	Yes	Yes
3	Organon	Yes	Yes
4	Kopran	No	Yes
5	Lupin	Yes	Yes
6	Ranbaxy	Yes	Yes
7	Orchid	Yes	Yes
8	Franco-India	No	Yes
9	Almet	No	Yes
10	Khandelwal	No	Yes
11	Baidyanath	No	Yes
12	Indian Herbs	No	Yes
13	Transflex	-	-

Table 22 reflects the general belief that market loss due to non-compliance of drugs can be minimized using IT tools. Further, companies perceive improvement in sales of their products because of better compliance that has resulted in improved awareness because of web information and direct to consumer communications. However, marketers believe that availability of better IT tools will have a greater impact in future.

Mr. Jim Weidert of BSN Healthcare Business Management emphasizes that for different situations, use of appropriate compliance information technologies should be made. According to him the IT tool that is appropriate for an elderly person may not be effective for children, critically sick or patients living alone.

Reminding patients to take drugs is extremely important, as forgetfulness is a very common affliction. Reminders were virtually impossible earlier because it was humanly impossible for a physician or a pharmacist to remind largely scattered patients. The revolution fostered by Information Technology has brought a welcome change. Now, it is possible to have an instant two-way communication between the care-givers (Physician and Pharmacist) on one hand and the patients on the other. Family members of a patient too can be motivated through IT tools in this respect.

Today automated technology makes it possible to send reminders with unerring accuracy anywhere any time. Such technologies and practices have not reached India as yet but in USA and to a lesser extent in Europe, Australia, Japan and Korea, they are now quite familiar and widespread. Website of M/s Epill (www.epill.com) provides details of some reminder technologies. These include:

1. **Medication Reminder Windows XP Software**: Using Windows PC (Desktop or Laptop), this software can help patients to remember to take medicines on time. It can also send e-mail messages to Cell Phone or Pager. Its distinct features include
   i. Daily Medication Reminder Alarms with Text on computer. Text messages are also important as they reduce medication errors because of vague, poorly understood and forgotten instructions;
   ii. Unlimited Daily Alarms;
   iii. Easy to use Calendar;
   iv. Easy to set up for all your medications including oral medicines, injections, and tests;

v. Keep track of medicines (prescription drugs, OTC drugs, vitamins) all the members of a family;

vi. Facility to send reminders from patients' computer via e-mail to pagers and mobile phones;

vii. History log file with Time and

viii. Prescription Refill reminders.

2. **Automated Reminder Service:** Medication Reminders are sent to patients' Personal Digital Assistant Pocket PC (PDA), Mobile Phone (as SMS or recorded vice) and Pagers. This product is compatible with products of major suppliers of IT gadgets such as Nokia, Motorola, Ericsson and Siemens to name a few. The service not just reminds to take medicines but also communicates important instructions such as:

   i. Right medication;

   ii. Right dose;

   iii. Right time;

   iv. Strength;

   v. Description;

   vi. Dosage;

   vii. Special instructions;

3. **Alarm Vibrating Wrist Watch:** It rings out alarms at previously set timings. Multiple alarms can be set for 24 hours at a time. There is no need to reset for repetitive therapy. Its unique features include

   i. Vibrating discreet alarms for hearing impaired patients;

   ii. Count Down/Up Timer & Chronograph and

   iii. Can also be set for two time zones.

4. **Monitored Automatic Dispenser with Voice Alarm**: This can dispense all tablets and capsules. If medicines are not taken on time, message immediately reaches the caregiver (Physician, Pharmacist or a family

member) by means of regular phone or cell/mobile phone. Its special features include

i. Facility to load medication information for a month at a time;
ii. Loud voice alarms including reminder text and flashing light;
iii. Facility to dispense up to six times a day;
iv. Possibility to Reuse;
v. Refill-reminder facility;
vi. Pre-programmed text/voice messages such as "take with food" and
vii. Early Dose feature allows dosing flexibility.

This list is suggestive and not exhaustive. There are many more such gadgets and gizmos available today. Since this reminder technology is still in its infancy and information technology itself holds many more promises. However, it is the responsibility of Government, Pharmaceutical Marketers and Health care givers to educate people about the dangers of non-compliance of drugs and train them in the use of IT tools available now for a better future. Sensitivity and willingness of those involved in providing health care will be the most important determinant.

Management of Rare Diseases

The terms *Rare Diseases* or *Orphan Diseases* or *Neglected Diseases* or *Non-Commercial Diseases* refer to numerous diseases that afflict so few patients all over the world that even though the cure is known yet no company attempts to produce them commercially as producing them would be uneconomical and unprofitable. Thus, the patients suffering from such diseases find no cure despite the fact that the scientific knowledge to treat such diseases exist. Technically speaking any disease that afflicts less than 2,00,000 persons all over the world qualifies to be termed as rare disease. The US Orphan Drugs Act 1983, qualifies a disease as rare if the prevalence is below 7.5 affected individuals per ten thousand people. However, realistically it includes all the diseases for which drug manufacturers refuse to undertake production of medicine on account of economical non-viability. Such diseases therefore are also termed as *non-commercial diseases*. This

issue also has an important ethical dimension. Patients suffering from such diseases are inclined to feel rejected from the health care system. It also nullifies our quest to improve quality and duration of life for patients.

As per the WHO reports there are around 5000 rare diseases spread all over the world and 500 million people suffer from these "neglected diseases". Though they affect a small group of patients yet, WHO refers to them as a real public health issue, as patients suffer because of commercial unavailability of drugs/treatment.

Visceral Leishmaniasis (Kala azar) is one of the best known examples of a rare disease in India. Other rare diseases are myopathy, cystic fibrosis, multiple sclerosis, lysosomal disease like mannasidosis and Pompe disease, Charcot disease, Turner syndrome etc.

Pharmaceutical industry so far has neglected orphan diseases because their treatment is unprofitable for them. However, new definition of human rights and the availability of technology to support medication of such diseases, makes it imperative that we do not remain insensitive to those suffering from rare diseases.

Since the issue is still new for a developing country like India, therefore the study is mainly dependent upon the information collected from developed countries. In the absence of any worthwhile quantitative data, empirical study was not possible. The researcher, however, has used deductive reasoning to establish a comprehensible link between growing medication possibilities for rare diseases and arrival of information technology. Both primary as well as secondary sources of information are used for the study. For primary information, online interviews were utilized frequently. The researcher contacted Ms Denise Silber of Basil Strategies and Ms Rebecca O'Donnel, Partner, Strategic Analysis & Tech Solutions for providing information. Important observations and findings in this respect are as follows:

1) The number of orphan drugs has increased many folds since the Information Technology was launched. The decade prior to 1983 saw fewer than ten such products coming to market in USA, however, as of today 259 such drugs have been approved by US FDA and are being

sold in the market. Further, as per the Information provided by Office of Orphan Products Development of USA, to date, over 1400 drugs and biologics have been designated as orphan-drugs.

2) The number of companies that make orphan drugs has increased. Just two decades back none of the pharmaceutical companies were interested in making orphan drugs.

3) Such commercial ventures to provide orphan drugs are profitable also. Air Pharma, for example, generates annual sales of $25 million to $100 million on each drug it commercializes. Genzyme had total annual revenues of $2 billion in 2004.

4) Such companies use Internet as a medium to market their drugs. Though even traditional pharmaceutical firms are using Internet for marketing, it is generally insignificant. They primarily depend upon large sales forces to promote their products. Pharmaceutical companies marketing orphan drugs, in contrast, primarily use lot of Internet technology to reach their physicians and patients. Orphan Medical incorporation, for example, markets as much as 77% of their drugs through Internet. Apart from providing medicines Orphan Medical Incorporation also provides assistance and guidance in following ways:

   a. Locating a pharmacy that may provide prescribed Orphan Medical product.

   b. Guidance on denied insurance claims (orphan drugs may not be in the list of drugs of insurance companies).

5) More and more companies are venturing into the world of orphan drugs. Glaxo, Pfizer, Astra Zeneca etc. have separate division to address the issue of orphan diseases. In India, Pfizer and Aventis are planning to take advantage of this opportunity. It will take them another 2-3 years to establish separate department committed to serve such a market.

6) For a true rare disease there is usually a patient support group that has on-line presence and often links to drug trials and therapies. Such patient support groups did not exist earlier. Their existence became a

reality only after Information Technology had taken strong roots. Even today patient groups exist mainly in cyberspace.

7) More and more countries, having recognized that orphan drugs can be made available using Internet, are coming up with suitable legislation.

8) Most developed countries have come up with Government Departments dedicated to help people suffering from rare diseases. A few examples are given in Table 23:

Table 23: Country-wise List of Some Organizations Dedicated for Rare Disease Medication

S. No.	Country	The Organization	Web Site
01	02	03	04
1	Denmark	Rare Disorders Denmark	www.raredisorders.dk
2	France	Alliance Maladies Rares	www.alliance-maladies-rares.org
3	Germany	Bundesarbeitsgemeinschaft Hilfe für Behinderte e.V. (BAGH)	www.bagh.de
4	Italy	Federazione Italiana Malattie Rare (UNIAMO)	www.uniamo.org
5	Netherlands	Vereniging Samenwerkende Ouder- en Patiëntenorganisaties (VSOP)	www.vsop.nl
6	Spain	Federación Española de Enfermedades Raras (FEDER)	www.enfermedades-raras.org
7	Sweden	Säilsynta diagnoser	www.sallsyntadiagnoser

Source: Respective Websites

It is interesting to note that all these departments shown in Table 23 have been established in 1990's, once again coinciding with the era of information technology.

9) Internet today provides sites to guide people to any kind of information regarding rare diseases and orphan drugs. Such sites giving addresses of major websites become the corner stone for communication between patients, physicians, pharmacists, governments, NGOs and support groups.

The researcher came across two instances where IT tools proved crucial. *Nail-Patella* is an extremely rare inherited disorder. A researcher at Johns Hopkins University, working on Nail-Patella narrates, that information technology helped him a lot. According to him, a lot of work he could do with

the families would have been impossible without the use of the Internet in the second half of the 1990s.

Dr. Christian Ratahat, a physician in Cambodia, diagnosing and treating patients suffering from methanol poisoning. An effective antidote for this poisoning did not exist. He immediately contacted Dr. Borron, a physician from US through email. Having knowledge about Orphan Medical Corporation, Dr. Borron contacted Patti Engel, Orphan Medical Corporation's Vice President of marketing and sales, and requested for the supply of Antizol (fomepizole) Injection, an Orphan Medical Corporation product. Antizol is the only approved antidote all over the world for ethylene glycol (antifreeze) and methanol poisoning. Within 24 Hours Dr. Borron was at Phnom Penh hospital and began to administer Antizols. Within hours of administering the drug, a marked improvement in the patients' status was noted. Almost 80 patients survived.

There are many other such instances where manufacturer of drugs for rare diseases backed by information technology have provided successful treatment to serious and even fatal diseases

Most crucial developments in treatment of rare disease coincide with the advent of information technology. Also, the companies dealing with such drugs candidly accept that their ventures will not be viable without the opportunities and capabilities provided by Information technology.

Limited market essentially means a communication gap between the supplier and consumer. Seller does not know all the buyers and obviously most potential buyers do not have any information about the supplier. Information Technology, however, has provided a simple and effective solution. There could be a web site supported by Government or Medical/Pharmacy Council that lists information about all such orphan diseases along with the names of manufacturers supplying the drug. This simple mechanism will enable every physician/pharmacist to seek help immediately. Once a manufacturer knows that more patients will now seek the therapy, he will be quickly able to decide how much to supply and at what price.

E-Prescriptions

Most Pharmaceutical Marketers are excited about the prospect of implementation of e-prescription technology. This according to them will make a secure system of information communication between physicians, pharmacists and patients. Ordinary hand-written prescription system, that is prevailing now, does not inspire much confidence because of numerous possibilities of errors associated with them. Errors result into discomfort, lack of cure, hospitalization and even death. L. Stevens found that twenty-five per cent patient death claims are due to medication errors. Pharmaceutical marketers are concerned because they and their products are also dragged into a controversy when any such events occur.

One of the most common problems associated with hand written prescriptions is their illegibility. The situation is further compounded in India because most medicines have similar if not exactly identical names. e.g. ***Dizec*** and ***Dizep***. Mr. B. Regal of Apothecaries Ltd, Delhi, mentioned pair of drugs that are often mistaken for each other because of similar names. Table 24 gives pair of such drugs.

Table 24: Pair of Drugs that are Often Mistaken for Similar Names

S.No	Drug	Company	Chemical Molecule	Pharmacological Action
01	02	03	04	05
1a	Flutin	Relaince	Fluoxetine	Antidepressant
1b	Fluvin	Bombay Tablet	Griseofulvin	Fungistati
2a	Isoprin	Unichem	Isorenaline Sulphate	Bronchial Asthama
2b	Isoptin	German Remedies	Verapamil	Hypertension
3a	Alzide	Alembic	Pyrzinamide	Tuberculosis
3b	Alzine	Core healthcare	Cetrizine	Antihistaminic
4a	Dynamax	Troikaa	Diclofenac	Analgesic & antipyretic
4b	Dynamox	Bal Pharma	Amoxyciline	Antibacterial
5a	Idicin	IDPL	Indomethacin	Osteoarrthritis
5b	Idilin	IDPL	Tetracycline	Bactereostatic
6a	Cedrot	Deepharma	Cefadroxyl	Respiratory tract infection
6b	Ceedot		Clindamycin	Sepsis
7a	Emenil	Astra-IDL	Metocloramide	Nausea
7b	Emetil	LA Pharma	Chlorpromazine	Psychotic Disorders

The reasons are that in India we have more than 20,000 manufacturers producing over 55000 brands as compared to 4000-5000 brands in advanced economies such as US and European Union of just about 500 basic molecules. Such high number of brands in the market naturally leads to shortage of names. Further, while looking for suitable brand names everyone follows the marketing norms which prescribe that a brand name must be short, easy to pronounce, write, remember and recall. Moreover there exists a strong tendency to correlate brand name with the drug name to build an unmistakable and unforgettable link between the two. Unfortunately, government agencies too have remained oblivious to this problem. In developed countries, the government agencies have a definite say in branding new drugs and formulations, hence such situations are not allowed to go out of control.

Errors in marketing drugs, therefore, occur mainly because of illegible hand-written prescription and a market full of similar and at times even identical names.

John Mack of Virsci Corporation inform that certain studies show that computerized prescription writing and order entry systems result in a fifty-five percent reduction in serious medication-related errors and an eighty-three percent reduction in the overall rate of medication errors.

Further E-prescriptions also verify for drug-drug, drug-age, and drug-allergy interactions.

Electronic prescriptions exploit the benefit of Internet technologies. Emergence of personal digital assistants (PDAs) and wireless messaging units allow a physician to select the patient's prescription and diagnosis from a web-based master patient listing. Such an arrangement makes possible for a doctor/pharmacist to check back if the prescribed drug may interact adversely with other medicines the patient is prescribed or already taking.

ePhysician, an organization dedicated to automate healthcare systems, has recently launched a radio frequency (RF) version of its product. With this system, physicians, via a wireless carrier, are able to send out the prescription from anywhere in the world. The prescription is thereafter encrypted and sent via radio frequency to the Internet, where it is again

encrypted using standard Internet methods and transmitted to the electronic prescription company such as ePhysician. The e-prescription company in turn passes on the prescription to the pharmacy through drugstore's order-entry system. The arrangement is quick, secure and error-free.

According to C. V. *Knoop and D.* Lovich e-prescribing, amongst all the e-health tools is likely to have the greatest impact on the pharmaceutical industry's competitive landscape.

Mr. Brijesh Regal, who has launched the first drug information center in India, *Apothecaries*~~, believes~~ e-prescription is the solution to overcome the chaos prevailing today. He outlines advantages of such a system, like Low costs~~; Simple, easy and validated~~ data-entry; Complete, concise and correct drug database; Simple prescription-editing process; Availability of information about medications prescribed by other physicians for the same patient; Quick and correct updating of drug database; Option to notify automatic refill and Option to make available patient instruction/education handouts in several languages. Option to print hardcopy of prescription, if required.

Features of e-prescription software

Features of common e-prescription software are as follows:

1. **Patient Management features:**

    a. **My Appointments** — allows users to quickly view a complete list of his/her appointments. Patients are listed by name, date of birth, appointment time.

    b. **Cross-Coverage** — allows users to quickly see the appointments for a colleague whose patients they are covering.

    c. **Patient Search** — allows a user to search for a patient who is not in the My Appointments queue.

2. **Drug Search capabilities**

    a. **My Favourites** — allows the user to manage a list of frequently written medications. A medication favourite includes a drug name, strength and form, as well as an associated set of directions.

b. **Drug Search** — allows users to search for a drug by name, for any therapeutic category.

3. **Drug Information search**

a. **Suggested Sig** — allows physicians to open the prescription writer page with all fields pre-populated, based on the most common way a particular drug is written. The user can either accept or edit the defaults.

b. **Drug-Drug Interaction Alerts** — warns the user that a selected drug interacts with another drug in the patient's prescription history or with a drug in the current prescription writing session.

c. **Drug-Allergy Alerts** — warns users that a selected drug interacts with an established patient allergy.

d. **Rx History** - allows the user to view a complete history of all of the prescriptions written on the system. The user can view the details of a particular medication such as the medication name, route, strength/form, dose, frequency, duration, dispense amount, refill number, any instructions, start/end date and who signed the prescription.

Drug interactions are a common phenomenon with medication in past. E-prescriptions now provide facility to practically eliminate them. Thus, pharmaceutical marketing will become much safer.

3. Pricing

Observations made regarding the pricing policies and strategies adapted by pharmaceutical industry are interesting. In terms of competition, following three types of pricing policies exist in pharmaceutical market:

1. **Monopoly Prices**: No firm can legally market a drug, the patent for which is held by another firm. The firm having the patent rights, therefore, has the freedom to decide price of such a drug or drugs. Prices in general are 10-15 times higher for patent drugs than when they are off patent. The high prices for patent drugs are accepted by the society because of the high cost of Research and Development that is involved in finding new

drugs. In other words pharmaceutical companies use skimming strategy to recover cost of R&D and make enough profit to take care of future R&D endeavors. Information Technology plays an important role in determining the right price for drugs under patent protection. The prices are determined using sophisticated econometric techniques that consider many variables that are difficult to comprehend, measure and predict. Marketing executives of Aventis and Pfizer mentioned econometric models that are designed using computer software for arriving at the appropriate prices, but could not provide any further details. Futures researchers may focus on this aspect of study by finding case studies or simply by using survey method.

2. **Monopolistic Prices**: Once a drug molecule is off patent its price plunges down dramatically. Other manufacturers also enter the competition. But prices remain different for the same molecule under different brands. Firms with good corporate brand image are able to market their brand at considerably higher prices. Thus, competition is based on features (such as safety, efficacy, less side effects etc.) other than price. However, companies like Ranbaxy that have high brand image, have also specialized in bringing down the prices using internal economies of operation and therefore are able to dominate such a market. Those consulted for this work believed that information technology does not play crucial role in setting up prices for generic (off-patent) drugs. However, looking at the market dynamics it is quite possible to use IT effectively to set prices that confound competitors.

3. **Government Controlled Pricing:** The Government under the provision of Drug Price Control Order (DPCO) controls the prices of life saving drugs. The prices are controlled if the molecule is judged to be an essential drug and if there is inadequate competition A company manufacturing drugs listed under DPCO is not allowed to set prices over and above what is decided by the Government. In such a scenario also information technology does not play any role in pricing related decisions.

The pilot survey had shown that the company executives were extremely reluctant to provide any information on pricing of their products because of

the confidentiality involved. Consequently, the researcher could not include price related questions in final interview schedule.

4. Place

Enterprise Resource Planning

Pharmaceutical companies have realized that the key to success in a highly competitive market, lie in its ability to not only efficiently manage the drug inventories, but also to forecast trends and identify weaknesses in the supply chain. It is no surprise, therefore, that a few organizations that were earlier adopting a cautious approach to enterprise solutions such as ERP, have now decided to reassess their approach to IT as a whole.

All the companies studied for this research work, interestingly are using same ERP package, supplied by *Systems, Applications and Products in Data Processing (SAP).* SAP is a German based global provider with installations in more than 107 countries. This observation is interesting because there are more than 10 other ERP package suppliers in the market including names as renowned as Oracle, Peoplesoft and Baan.

ERP package of SAP employs a three tier client/server architecture recognized by SAP customers, technology partners and industry analysts as a winning approach to solve some of today's most demanding information challenges. The three-tier architecture separates a system into three functional layers, each structured to support the demands of its function.

i. The database layer resides on central servers or mainframe host computers.

ii. The application layer holds the processing logic of the system, each preparing and formatting data for individual offices or departments.

iii. The presentation layer, typically on personal computers, handles all the tasks related to the presentation of data, including user interfaces that enable easy access to complex applications and data.

SAP has also incorporated and integrated the Internet, extranet and intranet technologies into business solutions for its customers. Both internally and together with its partners, the company is defining and creating a number of

Internet standards-based interfaces, applications and business processes that will extend the usefulness of SAP software in entirely new ways and to new classes of customers. Further, its applications can also be linked to business processes of customers and suppliers to create complete logistical chains, covering the entire route from supply to delivery.

Lupin has implemented SAP's latest version, 4.6 C, and in addition, the company will implement highly customized modules that SAP has developed specifically for the Pharmaceutical industry. Others too have shown similar inclinations. Most remarkable example of implementation of SAP in pharmaceutical industry is Orchid that is cited as a global reference case for ERP implementation in the Pharmaceutical sector by SAP.

The survey for this research work (Interview Schedule-I) reveals the improvement in enterprise resource planning due to use of ERP packages.

Improvement in Time to Receive Information and Its Accuracy

Improvement In timely receipt and accuracy of information is shown in Table 25.

Table 25: Improvement in Timely Receipt and Accuracy of Information

S. No.	Company	Improvement in Time to Receive Information	Improvement in Accuracy of Information
01	02	03	04
1	Pfizer	Substantial	Substantial
2	Aventis	Substantial	Substantial
3	Organon	Substantial	Substantial
4	Kopran	Substantial	Substantial
5	Lupin	Substantial	Substantial
6	Ranbaxy	Substantial	Substantial
7	Orchid	Substantial	Substantial
8	Franco-India	Substantial	Substantial
9	Almet	Substantial	Substantial
10	Khandelwal	Substantial	Substantial
11	Baidyanath	Substantial	Substantial
12	Indian Herbs	Substantial	Substantial

Table 25 reflects that there is a unanimous perception that information technology tools have led to substantial improvement in the speed of receiving information as well as its accuracy. Interestingly no one has responded to the other options namely fair, low or nil. Dr. T. Chakraborty of Organon says, "IT has made possible what was unthinkable to us few years back. Now discussions in our sales meeting are based on facts."

Improvement in Decision Making

Improvement in Resource planning related decisions with the application of information technology is shown in Table 26.

Table 26: Improvement In Resource Planning Related Decisions

S.No.	Company	Improvement In Time To Make Decision	Improvement In Quality Of Decision
01	02	03	04
1	Pfizer	Substantial	Substantial
2	Aventis	Substantial	Substantial
3	Organon	Substantial	Substantial
4	Kopran	Substantial	Substantial
5	Lupin	Substantial	Substantial
6	Ranbaxy	Substantial	Substantial
7	Orchid	Substantial	Substantial
8	Franco-India	Substantial	Substantial
9	Almet	Substantial	Substantial
10	Khandelwal	Substantial	Substantial
11	Baidyanath	Substantial	Substantial
12	Indian Herbs	Substantial	Substantial

Table 26 reflects that there is an unanimous opinion that decisions related to resource planning are quicker and better with IT tools. Interestingly no one has responded to the other options namely fair, low or nil. Better decision means decreased operational cost and improved performance.

Improvement in Controlling Inventory.

Inventory control, as in any other industry, is a vital cost control measure in pharmaceutical companies. The pharmaceutical products are of low volume but of high value. A large inventory invariably results in high costs and is known to cripple even healthiest of companies.

Quick turnover / rotation of working capital earns more and more profit to firm. At the same time, holding of products for a long time as inventory, causes blockage of working capital. Thus, finished products inventory involves hidden cost to the firm in addition to the chances of expiry and obsolescence. This hidden cost is directly related to profit of firm. Hence, for better cost-control, it is imperative to minimize the inventory carrying cost by proper planning of transportation, its mode, frequency, quick delivery and quick turnover.

Inventory below a desired level, on the other hand, leads to incidences where a physician prescribes a drug but the drug is not in available in the market. When this happens the drug is quickly substituted. Thus, all the expensive promotional efforts that were made to convince the physician to prescribe the drug go down the drain. Further, if such mishaps occur a little more frequently the physician stops prescribing the drug altogether. Experience shows that if this happens convincing the physician to begin prescribing the dug again becomes a difficult task. Thus, in Pharmaceutical industry inventory control is vital. Two other inventory issues that are unique to pharmaceutical products are:

a) The products require being stored in go-downs systematically - product wise and batch wise. This permits taking out a product in a smooth manner and also allows maintaining First in first out (FIFO). It is essential to maintain inventory in a systematic manner, since pharmaceuticals are dated products

b) Proper storage conditions are a must to maintain the products potency. Pharmaceutical products are very sensitive to atmospheric conditions. High or low temperature or humidity can transform a medicine into trash or even poison in no time. Sunlight too acts as a catalyst to decompose

the pharmaceutical products. Such products are also susceptible to microbial attack.

Improvement in Management of Finished Goods Inventory

The researcher collected information on the average finished goods inventory of pharmaceutical companies in 1997 and 2004 that is, before and after application of IT tools. The comparison clearly indicates improvement in management of finished goods inventory.

Table 27: Improvement in Management of Finished Goods Inventory

S. No.	Company	Average Finished Goods Inventory (1997)	Average Finished Goods Inventory (2004)
01	02	03	04
1	Pfizer	90-120 days	35-40 days*
2	Aventis	90-120 days	35-40 days*
3	Organon	90-120 days	50-60 days**
4	Kopran	120-150 days	60-70 days
5	Lupin	120-150 days	35-45 days
6	Ranbaxy	120 -150 days	40-45 days
7	Orchid	90-120 days	40-45 days
8	Franco-India	120-150 days	70-80 days
9	Almet	120 - 150 days	60-70 days
10	Khandelwal	120-150 days	60-70 days
11	Baidyanath	120-150 days	50-60 days
12	Indian Herbs	120-150 days	60-70 days

*Notes: 1*For certain high value products it is kept at 25 days level also.*
*2**They have implemented SAP ERP system and by now have achieved levels as low as that of competitive industries.*

From this information given in Table 27 and subsequent discussion following points emerge:

a) Inventory levels in pharmaceutical industry have come down dramatically. The marketing executives attribute it absolutely to the tools of information technology that are available with them now. In fact, it is such back-end operations that Information technology is making a

spectacular difference. IT tools are helping to make products available at the right place and at the right time with less cost.

b) All companies are trying to keep the inventory levels at a minimum. The difference in their inventory level reflects the level of IT tools they are using. The best ones such as Pfizer, Aventis, Lupin, Orchid and Ranbaxy have already implemented Enterprise Resource Planning (ERP) modules.

Reduction in Inventory Related Mishaps

It is observed that The information technology has reduced the incidences of inventory related mishaps, that is, overstocking or under-stocking. Table 28 shows the incidences of inventory related mishaps in 2004, as percentage of mishaps occurred in 1997, in the companies under study.

Table 28: Inventory Related Mishaps

S.No.	Company	Inventory Mishaps in 2004 As Percentage Of Mishaps In 1997
01	02	03
1	Pfizer	10%
2	Aventis	10%
3	Organon	15%
4	Kopran	30%
5	Lupin	15%
6	Ranbaxy	15%
7	Orchid	10%
8	Franco-India	40%
9	Almet	35%
10	Khandelwal	30%
11	Baidyanath	40%
12	Indian Herbs	30%

Table 28 shows that situations of being overstocked or under-stocked have come down drastically in all the firms, considering the fact that inventory levels now are kept extremely low. It is observed that Almet ,Franco India and Baidyanath are not able to reduce incidents related to under-stocking

and over stocking significantly. These firms will have to explore the possibility of applying ERP packages in order to reduce number of incidences of inventory mishaps.

Improvement in Quality of Forecasting

Forecasting is the foundation of sales operations. Most marketers depend on faulty forecasting methods for inventory and other sales operations. The information technology provides improved and error free methods of forecasting taking, a large number of parameters simultaneously, into consideration. The information technology tools have significantly reduced forecasting errors and their magnitude. Table 29 displays the average percentage of total errors, of companies under study, occurred in 1997 and 2004 with respect to the magnitude of errors.

Table 29: **Improvement In Quality of Forecasting**

S.No.	Magnitude of Errors	Average % Of Errors In 1997	Average % Of Errors In 2004
01	02	03	04
1	0% - 10%	5%	80%
2	10% - 20%	60%	20%
3	20% - 40%	25%	Nil
4	40% and above	10%	Nil

We do find from the information given in Table 29 that margin of errors too has come down dramatically. Errors of 20% and above have disappeared totally. Thereby meaning more reliance on sales forecast methods. Higher confidence in sales forecast methods may lead to better decision making.

Reduction in Order Processing Time

With the application of Information technology tools, the order processing time has reduced significantly. Average processing time of companies before and after application of IT tools are depicted in Table 30.

Table 30 reflects that orders are now being processed much faster. This means customers receive material more quickly than earlier.

Table 30: **Order Processing Time**

S.No.	Company	Order Processing Time (1997)	Order Processing Time (2004)
01	02	03	04
1	Pfizer	3-4 days	4 to 24 hours
2	Aventis	3-4 days	4 to 24 hours
3	Organon	3-5 days	4 to 24 hours
4	Kopran	5 days	4 to 24 hours
5	Lupin	4-5 days	4 to 24 hours
6	Ranbaxy	4-5 days	4 to 24 hours
7	Orchid	4-5 days	4 to 24 hours
8	Franco-India	5-6 days	1-2 days
9	Almet	5-6 days	1-2 days
10	Khandelwal	5-6 days	1-2 days
11	Baidyanath	5-6 days	1-2 days
12	Indian Herbs	5-6 days	1-2 days

It is also evident from the table that companies that have automated enterprise resource planning have achieved significant results in this respect. Companies like Franco India, Almet, Khandelwal, Baidyyanath and Indian herbs needs to further reduce the order processing time.

Improvement in Accounts Receivable

Receiving the payment in time against the order is a problem faced by pharmaceutical industry as happens in other industries also. Timely receipt of payment is important. Payments are not received in time mainly because of lack of proper follow up. If instant and fresh information can be communicated to MR regarding the status of the payments to be received, they will follow it up and recover the amount. Information technology provides us with the tools to achieve this. This is obvious also from the information collected. Improvement in this context is shown in Table 31.

Table 31: Improvement in Accounts Receivable

S.No.	Company	Payment Not Received In Time (1997)	Payment Not Received In Time (2004)
01	02	03	04
1	Pfizer	--	--
2	Aventis	--	--
3	Organon	--	--
4	Kopran	20%	5%
5	Lupin	--	--
6	Ranbaxy	20%	In cash
7	Orchid	20%	4-5%
8	Franco-India	30%	15%
9	Almet	25%	10%
10	Khandelwal	30%	10%
11	Baidyanath	30%	15%
12	Indian Herbs	30%	15%

It may be observed from the table that for companies namely, Pfizer, Aventis, Organon and Lupin deal in spot payment only, therefore, they do not face problems of receiving the payments in time. Other companies have also significantly reduced the accounts receivable.

Sales Operations

Information technology affects selling operation. While discussing e-detailing we will find that selling is an intensely human oriented discipline. The sales function has proved to be the most difficult process to automate, not only because of its dynamism but also because of its culture. Sales teams prefer to be autonomous for obvious reasons and hence are resistant to change. However, many components of sales operation such as lead generation and tracking, field sales, call centers telephonic sales, distribution, inventory management, order management, forecasting, sales administration and marketing encyclopedia can be automated.

The survey for this research work (Interview Schedule-I) reveals the improvement in sales operation due to use of IT tools.

Improvement in Physicians' and Pharmacists' Data Bank

Physicians' and pharmacists' data bank of companies under study have significantly improved through IT tools. To a query regarding number of physicians and pharmacists in 1997 and 2004 and thereafter calculating the percentage improvement in the respective categories, following figures are emerged out which are depicted in Table 32.

Table 32: Improvement In Physicians' and Pharmacists' Data Bank

S.No	Company	% Improvement Physicians' data	% Improvement Pharmacists' data
01	02	03	04
1	Pfizer	40%	20%
2	Aventis	40%	20%
3	Organon	35%	20%
4	Kopran	40%	35%
5	Lupin	40%	30%
6	Ranbaxy	50%	35%
7	Orchid	40%	30%
8	Franco-India	30%	20%
9	Almet	60%	50%
10	Khandelwal	30%	25%
11	Baidyanath	35%	20%
12	Indian Herbs	35%	20%
13	Transflex	0%	0%

From the information given in Table 32 and further discussions, it may be observed:

a) Most companies have improved their data banks substantially. Before the advent of information technology, Glaxo was said to have the most complete and most up to date physician data, which they kept confidential. It gave them a definite edge over other companies.

However, progressive companies like Ranbaxy believe that IT tools have helped them to more or less at par with Glaxo.

b) The relatively higher improvement of data bank for Almet merely reflects the geographical expansion of their operations. From 1997 onwards they have begun to serve markets in Chhattisgarh, Orissa and Jharkhand also.

c) Transflex does not reach out to physicians directly. They sell their products to distributors and then it is distributors who push the drugs to market.

d) A point that came up during the subsequent discussion was better updating of data bank. Earlier, the executives told, it was common to continue to have records of physicians who had expired or had left country/city. Medical representatives without visiting such physicians kept on "visiting them" on paper. IT tools have helped in getting rid of such false situations by making record updating simple, effective and certain.

e) Another development in this regard is the qualitative improvement of such records. A time was when bare minimum information about physicians and chemists was stored and used. Today physician details such as specialization/super-specialization, demographic, behavioral and psychographic details too are known and can be retrieved on any one or more criteria at the click of the mouse.

Use of IT to Restructure Sales Territories

Application of Information technology has been reported to be useful for restructuring sales territories. Table 33 depicts the responses.

From the Table 33 it is evident that IT tools are not commonly used for restructuring of sales territories. Progressive companies like Pfizer, Aventis, Organon, Lupin, Ranbaxy and Orchid are working on it. On the whole it has made some difference but it has not led to any dramatic cost saving or coverage advantages.

Table 33: **Restructuring of Sales Territories and Related Benefits**

S. No.	Company	Use of IT	Lowering of Traveling Cost	Improving Coverage	Rationalization of Structure Of Territory
01	02	03	04	05	06
1	Pfizer	Yes	Appreciable	Appreciable	Yes
2	Aventis	Yes	Little	Appreciable	Yes
3	Organon	Yes	Little	Appreciable	Yes
4	Kopran	No	-	-	-
5	Lupin	Yes	No	Appreciable	Yes
6	Ranbaxy	Yes	Appreciable	Appreciable	Yes
7	Orchid	Yes	Little	Appreciable	Yes
8	Franco-India	No	-	-	-
9	Almet	No	-	-	-
10	Khandelwal	No	-	-	-
11	Baidyanath	No	-	-	-
12	Indian Herbs	No	-	-	-

But, they admit it has made the task easier. Ranbaxy and Orchid have done it frequently during recent years.

Improvement in the Time to Receive Daily Reports

A standard practice in pharmaceutical marketing is preparation of Daily Sales Report (DSR) that is filled by each and every medical representative and forwarded to regional or head office. A standard daily report contains following information such as Name of MR and his territory; Total and Cumulative (for the month) Doctor calls (along with names) and Average call/day; Total and Cumulative (for the month) Chemist calls (along with names) and Average call/day; Orders booked (No. and Value) and cumulative Orders booked (No. and Value); Performance in brief of stockiest and sub-stockiest of his territory; Expense details (Daily and cumulative); Details of dispatch and credit notes; Remarks regarding company products

and Remarks if any; Views/suggestions of prospects. Receiving daily reports in time is important for planning and monitoring sales progress.

Improvement in the Time to Receive Daily Reports:

Information technology has considerably reduced the time required by the company to receive daily sales reports from medical representatives. The time required by companies under study in 1997 and 2004 is shown in Table 34.

Table 34: Improvement in Time to Receive Daily Sales Reports

S.No.	Company	Time Required In 1997	Time Required In 2004
01	02	03	04
1	Pfizer	8-9 days	1 day
2	Aventis	8-9 days	1 day
3	Organon	8-9 days	1-2 days
4	Kopran	8-9 days	1-3 days
5	Lupin	8-9 days	1-2 days
6	Ranbaxy	8-9 days	1-2 days
7	Orchid	8-9 days	1-2 days
8	Franco-India	8-9 days	3-6 days
9	Almet	8-9 days	3-6 days
10	Khandelwal	8-9 days	3-4 days
11	Baidyanath	8-9 days	3-6 days
12	Indian Herbs	8-9 days	3-4 days

From the information given in Table 34 and subsequent discussion following points emerged:

a) The time required to receive daily sales reports has come down drastically since the advent of information technology.

b) The existing time gap depends upon the different tools being used. Whereas some companies such as Pfizer and Aventis are in the process of providing Laptops to their medical representatives to send reports via e-mail on the same day, there are other companies like Ranbaxy, Lupin and Organon that encourage their medical

representatives to use Internet Café to send reports via email. FAX is not considered a good mode to send such reports. Still others are relying on couriers to receive the reports.

The Pharmaceutical companies have been endeavoring to automate the DSRs of field staff from 1980s onwards. One of the explanations why the progress is unsatisfactory in this area is due to the mammoth task of data entry of information received from DSRs. It requires a pharmaceutical company to deploy a large team of data entry operators to enter the details of the DSRs, which is time consuming and cost prohibitive. A medium sized Pharmaceutical company with all India operations will have about 400 MRs who make about 18 calls per day (10 doctors, 5 druggists and 3 stockists) thus, 7200 records per day, 216,000 records per month and 25,92,000 records per annum.

Even the Pharmaceutical companies attempting to use email as a mode to send information of DSRs have felt that they have just changed the DSR manual system reports to Email based reports without any Management Information System (MIS) and Decision Support System (DSS).

A better alternative is expected from IT tools. iNetPharma of Eon Soft (India) Pvt Ltd, a Bangalore based Pharmaceutical company provides a solution whereby pharmaceutical company will have on-line information. This is a web-based solution where a medical representative can enter his daily report details directly on the web site, thus, eliminating the need to enter the data yet again by an army of data entry operators. Such an arrangement will also result in less number of errors. Aventis and Pfizer are planning to introduce such a *web-based solution*. Their experiences will benefit other companies also.

A report from *Base* (Base Information Ltd. 2004) tells of another experiment that the Industry is observing carefully is the M-SFA application, a mobile-based sales force automation application from Base. As in any growing pharmaceutical company, Sun has a large sales force that needed to interact with busy physicians. The need of the hour is to keep the sales force updated so that they can answer doctors' queries. After evaluating a host of

SFA applications, the company finally decided to go in for the application from Base.

Today, Sun's sales force can request information from the company, access corporate information, and file their activity reports from any Java-enabled mobile phone. Thus, its marketing team does not have to look out for a cyber café at odd hours or locations to send in call reports. Depending on the profile of the salesman, he is shown the list of doctors on his route. Sun's business depends on the relationship with specialist doctors, therefore, information about the discussions a salesman has with doctors is critical. Using the SFA application, a salesman can file details of his meeting with the doctor. Top management can also use the filed information to query a list of doctors missed out by a particular salesman during a particular period. Changes made in the information on the corporate server can automatically be uploaded to the user's phone.

Yet another web-based software package is *MD Sales*, a sales force management system of M/s Ajax. MD Sales is specifically aimed at the Indian Pharmaceutical Industry. Its features include:

i. Creating optimized daily schedules for Medical Representatives;

ii. Customized reports of each Doctor visited with sales suggestions based on profile;

iii. Reducing the information needed to be absorbed by MRs for their sales efforts;

iv. Organizing feedback from Doctors to MRs on competing drugs to enable companies make better sales decisions;

v. Capturing information on competitors so companies can pre-emptively create more effective marketing initiatives;

vi. Eliminating the need to print costly product monographs;

vii. Increasing Doctors' loyalty to the company through a better understanding of their needs;

viii. Product Monographs simplified and searchable along various parameters;

ix. Information of competitive drugs strengths and weaknesses compared to the firm's products;

x. Tracking performance of competitor's drugs and marketing initiatives;

xi. Current sales plans can be tracked and measured, along with details of previous sales efforts;

xii. Analysis of product strategies based on doctor's feedback & competitors' performance;

xiii. Scheduling meetings;

xiv. Interactions/ collaboration at all employee levels;

xv. Better supervision by at all employee levels;

xvi. Comparison of tour programme Vs actual daily report;

xvii. Comparison of company budget Vs actual MR expenses;

xviii. Reports-online include product wise sales, area wise sales, MR wise sales, incentive, daily MR report, expense report, tour programme, etc.;

xix. Immediate access to online information, eg; product monographs, publications etc and

xx. Strategy formulation/ product launches based on competitive information.

Since sales force form a major portion of a pharmaceutical company's marketing efforts, a good sales force automation system can go a long way in reducing marketing costs and increasing effectiveness.

Improvement in Analysis of Daily Sales Report

Before the advent of Information technology the analysis of data received via DSR was extremely poor. Hardly any analysis was done except summing up the sales made. Information technology tools allow, however, possibility to analyze DSR s thoroughly. Improvement in the analysis is shown in Table 35.

Table 35: Improvement In Analysis of Daily Sales Reports

S.No.	Company	Improvement Of Analysis of DSR
01	02	03
1	Pfizer	Substantial
2	Aventis	Substantial
3	Organon	Substantial
4	Kopran	Appreciable
5	Lupin	Substantial
6	Ranbaxy	Substantial
7	Orchid	Substantial
8	Franco-India	Appreciable
9	Almet	Appreciable
10	Khandelwal	Appreciable
11	Baidyanath	Appreciable
12	Indian Herbs	Appreciable

Table 35 indicates that marketing executives of organizations believe that improvement in DSR analysis has improved substantially. Pfizer, Aventis etc have made better progress in this respect.

Improvement in Number of Physicians Visited Per Day

Table 36 depicts the number of physicians visited per day by marketing representatives of companies under study in 1997 and 2004. From the information given in Table 36 and subsequent discussion, following picture emerges:

a) There is practically no improvement in the number of physicians visited per day. It was anticipated that using tools of information technology it would be possible to make instant appointments or be informed about cancellation of appointments. This will improve productivity of MRs. In USA such technologies, mainly mobile phone based and email-based, exist that provide instant information to the MR regarding cancelled appointments. This allows them to plan visiting others by fixing appointment over mobile phones.

b) The number of physicians visited by MRs of Pfizer and Aventis has actually come down because of their changed policy to spend quality time with physicians who matter.

Table 36: **Improvement in Number of Physicians Visited Per Day**

S.No.	Company	No. Of Physicians Visited/Day (1997)	No. Of Physicians Visited/Day (2004)
01	**02**	**03**	**04**
1	Pfizer	10-12	8-10
2	Aventis	10-12	8-10
3	Organon	8-9	8-9
4	Kopran	10-12	10-12
5	Lupin	10-14	10-14
6	Ranbaxy	10-12	10-14
7	Orchid	10-12	10-12
8	Franco-India	9-11	10-12
9	Almet	12-14	12-14
10	Khandelwal	10-12	10-12
11	Baidyanath	10-12	10-12
12	Indian Herbs	10-12	10-12

Improvement in Average Time an MR Spends with Physician

Table 37 shows the average time spent with physicians by an MR of companies under study in 1997 and 2004, for detailing the companies products. Improvement in this respect is depicted in Table 37.

From the information contained in Table 37 and subsequent discussion following points emerged:

Table 37: **Improvement in Average Time MR Spends with a Physician**

S.No.	Company	Time Spent With Physician (1997)	Time Spent With Physician (2004)
01	02	03	04
1	Pfizer	10-12 minutes	10-12 minutes
2	Aventis	10-12 minutes	14-15 minutes
3	Organon	15 minutes	10-12 minutes
4	Kopran	10-12 minutes	8-10 minutes
5	Lupin	8-12 minutes	8-10 minutes
6	Ranbaxy	12-15 minutes	10-12 minutes
7	Orchid	12-15 minutes	8-10 minutes
8	Franco-India	8-10 minutes	4-6 minutes
9	Almet	10-12 minutes	4-6 minutes
10	Khandelwal	10-15 minutes	7-8 minutes
11	Baidyanath	8-10 minutes	4-6 minutes
12	Indian Herbs	10-12 minutes	4-6 minutes

a) The average time that an MR gets to spend with Physician is steadily coming down. The reason is that today the MRs of thousands of companies are trying to promote over 60,000 brands. This is about 15 times higher than what we find in Europe and US. The explosion took place sometimes in 1990 when all companies began to add more and more MRs to their sals force to keep ahead of their competitors. In fact, if smaller companies are also taken into consideration the average time spent by an MR with a physician will not exceed 1-2 minutes. Information technology has the capacity to drastically reduce the operation time but it can not create time. Number of MRs however has increased three times meanwhile. It is but natural, therefore, that the time a physician can afford to spend with a MR has gone down to less than one-third the time of what it was. The paradox is that new generation drugs require dissemination of greater information. New drug issues are cropping up. Marketing executives feel that the right amount of time required for a detailing schedule ought to be 20-25 minutes. Thus, until a solution to this overcrowding is found out,

pharmaceutical marketing will remain clueless and information technology will remain helpless. The WTO patent laws are expected to make many a Pharmaceutical companies unviable as independent units. Many smaller players will disappear and a large number will survive as contractual manufacturer, seller or distributor of larger companies particularly the multinationals. Thus, the number of independent pharmaceutical manufacturers and marketers will come down drastically. This is the experience in China and Brazil also. If and when this happens the chamber of physicians will no longer be crowded with MRs and they will have detailed interaction.

b) The larger companies are not depending entirely upon medical representatives to gain access to physicians. They are organizing seminars and symposium to reach out to the physicians. For the launch of new products physicians are invited to participate in information dissemination sessions. Physicians are approached to discuss their clinical problems and if possible, are provided with solutions. The brochures and other promotional material are finalized with their help. The mechanism is that many sets of brochures and promotional materials are prepared and in a Physicians meet each set is shown. Physicians judge each and mark them according to the given scheme – all over an automated system. The promotional material that receives highest points is selected. Thus, the evolution of process to transform physicians from consumer to *prosumers* (producer + consumer) has already begun. The companies who will look upon physicians as *strategic partners* will grow.

c) Medical Representatives of companies like Franco-Indian Pharmaceuticals do not require much time to interact as they are marketing age-old products with which physicians are quite familiar.

Market Segmentation

It is said that most successful segmentation would be based on such a perfect knowledge about the customers that every customer will be a distinct market segment for the marketer. This sounds impossible for mass

consumption products, but for pharmaceutical market it is quite possible to attain near perfection. The reason being that while the drugs are consumed in a mass scale, the decisive influencers (physicians) are virtually finite in numbers (Virtually because they are still numerous). For prescription drugs, physicians are the primary customers by virtue of the significant influence they exercise over the buyers.

Pharmaceutical companies segmented the market in past also. The efforts failed because the data required was huge and dynamic in nature. Also analytical tools available today did not exist earlier. Collecting such vast, multidimensional and dynamic information from scattered sources, analyzing it and converting it into meaningful information in time was not possible manually. Advent of information technology has made this task possible. Information was collected from the marketing executives of pharmaceutical companies under study to understand the improvement in market segmentation. The observations in this respect have been given below.

I. In **Small Sized Companies:** In smaller companies such as Almet corporation, and Franco-Indian Pharmaceuticals market segmentation is traditional, i.e., based on pareto analysis that categorizes physicians' into A, B and C category depending upon the volume of prescription generated (number of prescriptions multiplied by their average value) by them, with 'A' category being assigned to the physician generating high volume, 'B' to those generating moderate volume and 'C' to those generating low volume of prescriptions. This is done so that medical representatives do not waste precious time, effort and money trying to reach all the physicians. Specialization of physician is another parameter used by them

II In **Moderate Sized Companies:** Moderate sized companies that still have not developed enough in-house IT infrastructure such as Khandelwal Laboratories, Kopran and Lupin India Ltd buy segmentation statistics from market research firms apart from developing their own information bases from time to time, In addition to what smaller companies do, such companies use certain other parameters such as Age; Years of service; Geographical location; Gender; Education and

Income to segment market. Sometimes they use more advanced bases of segmentation depending on their requirements.

III **Large Sized Companies:** Large companies, such as Pfizer, Aventis and Organon, that have developed sufficient in-house IT infrastructure and have adopted modern marketing approach have evolved sophisticated bases of segmentation and the marketing executives of the companies studied informed that segmentation apart from the ones mentioned earlier, is also done using following parameters:

1) Socio-economic segmentation includes University/College/Institution from where passed out

2) Behavioural and attitudinal segmentation includes:

   a) Current users, Ex-users, Potential users, first time users.

   b) Preference for low price, Moderate price, High priced, Indifferent to price.

   c) Preferred time to meet - Morning, Afternoon, Evening, Late evening.

   d) Preferred day to meet – Sunday to Saturday.

   e) Sensitivity to other marketing mix elements (Mailings, Samples, Literature, Journal etc.)

   f) Ability use computers and Internet – Nil, Low, High, Very high.

   g) Inclination to use net to search professional information – Nil, Low, High, very high.

   h) Preferred medium to interact with the company - Personal, Internet, Mails, Video-conferencing, Web conferencing, Web-homing/surfing

   i) Involvement with medical association – Nil, Low, Moderate, High.

   j) Participation in conferences – Nil, Low, Moderate, High.

   k) Learning style –and assimilation of information.

   l) Benefit sought – Low price, less side effect, high compliance.

m) Use occasion for a product – First, second or third line therapy

n) Stages of readiness – Awareness, liking, preference.

o) Risk taking inclination – High, Moderate, Low.

p) Age-profile of visiting patients.

q) Income profile of visiting patients.

r) Educational profile of visiting patients.

s) Occupational profile of visiting patients.

t) Gender profile of visiting patients.

3) Psychographic segmentation includes:

a) Life style – Disillusioned, Overstretched, Learners, Experimentalists, Progressive, Self-satisfied.

b) Independence from authority in decision making – Low, Moderate, High.

The list provided is suggestive and not exhaustive. Such companies are not averse to buying information if required but prefer to develop their own database.

From the results it is clear that different companies are segmenting markets at different levels. At the most basic level are the companies that are smaller and have not invested heavily in IT infrastructure so far. Such companies continue to look upon physicians as a homogeneous lot. They differentiate them only in terms of size of their practice apart from specialization. Size of practice is an important criterion and allows one to prioritize efforts. The problem is that their competitors are doing exactly the same. Thus, 'A' category physicians get flooded with MR calls, while 'C' category physicians are the neglected lot. Thus, this segmentation base has already lost its effectiveness and appeal. An interesting point to note is that in the absence of IT infrastructure, such companies have not used behavioural and psychographic parameters to segment market. Thus, two vital dimensions of segmentation are ignored.

Companies practicing second level of segmentation remain focused on identifying and serving high volume prescribers. A high prescriber is the one who prescribe the company's product heavily.

It is the third and last category of pharmaceutical marketers that carefully determine the psychographic profile of physicians and then plan and launch micro campaigns to influence them favourably.

This whole approach is not as simple as it sounds. It calls for providing extensive training to Medical Representatives to study and analyse the behavioural/attitudinal traits of physicians.

The marketing executives of these companies narrated some very interesting cases where they could influence the physicians favourably because of innovative segmentation. Many pediatricians while choosing liquid preparation are more interested in the drug compliance of the patients. By their experience such pediatricians have learnt that taste of medicine is the key factor behind acceptance. Having learnt this the company redesigned their promotion schemes specifically for such pediatricians, carefully identified using IT tools, for their pediatric antibiotic preparation with its 'great taste' being given prominence in their promotional literature. The result was that sale of their product increased considerably with about 80-100 physicians scattered all over India.

A somewhat similar case involves antibiotic preparations for adults. We know that antibiotics are effective only when their prescribed course is completed. There are certain others for whom it is more important than having the patients complete the course without any errors. One company identified such physicians and during promotion campaign to them, it was emphasized that their brand makes it easier for the a patients to take dose in the required quantity, as the dose size was only two tablets a day. Most other brands require 3 or 4 tablets to be taken at intervals of 8 hours and 6 hours respectively. Errors are most common when hours are to be counted. This campaign has also been successful.

Our experience with advertising is that it invites counter advertisements by the competitors. When the competitors follow the suit then it would be a zero sum game.

Ms P. Mohile provides interesting information on current trends in market segmentation. According to her ORG-MARG has launched the new venture, *ORG-MARG web services*. The purpose and objectives of ORG-MARG web services is to provide market information and database services to pharmaceutical clients. To fulfill these objectives, it has launched two sites:

i. Doktorindia.com - An exclusive internet club for doctors.

ii. Dr.Impact - Tracking doctor profiles.

Dr.Impact is a doctor information service, profiling and tracking doctors across the four seasons. Initially, it will cover three specialties cardiology, diabetology and psychiatry. Information will be gathered across leading 350-400 cardiologists, 125-150 diabetologists/endocrinologists and 225-250 psychiatrists in 23 metro towns. This will cover about 775 doctors in 23 metro towns during each round. Frequency of providing reports will be four monthly. The data will be provided in CD form. The report will cover Personal details of the doctor; Practice details; Prescription pattern; Psychographic of doctor; Other valuable information.

This product can be used as a sales tool to support the local territory representative's activities. This product allows clients to identify and ultimately influence those doctors with the greatest prescribing potential for their products. This can be utilised not only through sales force but also through accurate and targeted direct mail campaigns. This will be the best individual doctor focused report in the hands of the marketing managers/product managers.

Other Trends in Segmentation: Mr. S. Kallianpur of Pfizer India Ltd. informs of a very interesting development is the use of Geographical Information System (GIS) segmenting Pharmaceutical markets.

GIS is a tool to solve environmental related problems and to understand and find solutions to different socio-geographic issues.

Pharmaceutical companies are successful customers of GIS. Much earlier it helped this industry to improve supply chain management effectiveness. It is used by Pfizer India to restructure sales territories. Now importance of human geography has emerged as an important principle. Exponents of GIS system claim that 80% field data in pharmaceutical industry is geographically referenced. It, therefore, has great potential in territory demarcation, chronic disease management and endemic disease management.

People living in different localities suffer from different diseases. Lung cancer, for example, is thrice more prevalent in slums or underprivileged localities than in affluent areas. Psychiatric drugs seem to have different impact in persons having similar clinical problems but having different neighborhood or family bonds. A. Needhan and P. Smith have clearly established the relationship between how people live their lives and their health care needs. Therapeutic areas where life-style is found to be a profound factor are Cardiovascular, Congestive heart diseases, hypertension, diabetes, epilepsy, Musculo-skeletal pain, Hypothyroidism, Asthma, Cancer and Obstructive Pulmonary Diseases. It is believed that adopting appropriate life-style can prevent half of diseases. Thus, the susceptible population can be treated in a cost effective manner by focusing on localities where people have similar life style. Thus, life-style segmentation assumes an altogether a higher dimension vis-à-vis pharmaceutical marketing. GIS plays an important role to identify and represent regions of similarity and dissimilarity for these factors too.

Retail Marketing

Pharmacies are now transforming into Tele-pharmacies and E-pharmacies. E-pharmacy and traditional pharmacy run on the same principle, i.e., they seek to derive revenues directly from the sale of prescription and drugs.

Survival and growth of e-pharmacies lie in the benefits they provide to a customer over and above the ones provided by traditional pharmacies.

E-pharmacies are yet to arrive in India though they are doing well in developed countries. The researcher however, could get important information about these from Mr. B. Regal, who at the time this survey was

undertaken was the head, Community Pharmacy Section, Indian Pharmaceutical Association.

The findings of the study are broadly categorized into following two parts.

1. **Present Benefits to The Customers**

In the opinion of the respondents in the study, following are found to be the prevailing benefits of E-pharmacy.

a) **Expedience and Comfort**:

E-pharmacies provide home-delivery of medicines. This issue is closely linked to vital socio-familial change that has occurred in past two-three decades -'The home alone patient'. Home delivery of medicine is important for such patients.

b) **Privacy of Transaction**

Customers are sometimes embarrassed while buying some products. Many customers suffer unnecessarily, as they are shy to buy products that they perceive as too embarrassing to order in public .This also includes products for which instructions on use , application or effect are potentially sensitive, embarrassing or even distressing . The anonymity provided by the E-pharmacy comes as a welcome change for such circumstances. The issue is important for pharmaceutical marketers as products not bought because of embarrassment result in loss of market.

c) **Complete and Correct Information**:

Usage of drug is a very complicated and delicate operation. The instructions required are not only about usage-time, frequency, duration precautions etc., but also about, removing of drug from the package, administering the drug, possible side-effects, drug-allergies, drug-drug interaction, drug-food interactions, adverse drug reactions, hypersensitivity etc. A major problem associated with medication is incomplete, vague, oral instructions provided to a patient vis-à-vis usage of drugs. E-pharmacies are an excellent medium to pass on correct, complete, accurate and permanent (written) instructions to

the patients thus, reducing the risk of incorrect drug usage to a minimal.

2. Expected **Benefits to the Customers**

Apart from the above, the experts **believe** that following advantages of On-line pharmacies too will be available in future:

a) **Cheaper Drugs**

E-pharmacies provide drugs at a cheaper rate than a traditional pharmacies does. This is , because overhead costs are very low for e-pharmacy in comparison to that of traditional Pharmacy.

b) **Better Drug Compliance**

People show low drug adherence. E-pharmacies could become a vital medium to enforce and encourage drug compliance. This is particularly true for chronic ailments, long-term medication and medication for aged patient. Marketers may find it beneficial as this could help in selling drugs that are not bought because of high prevalence of drug non-compliance.

c) **Better After-Sales Services**

E-pharmacies allow two way communication between pharmacists and patients. Thus, any clarification or additional information desired later is possible. This communication results in avoidance of serious errors. Other after sales service includes conveying automatic reminders when prescriptions are refilling.

d) **Higher Reliability**

Orders processed through Internet are found to be more complete and accurate.

Ethical and Legal Issues

Unethical businesspersons can misuse e-pharmacies. We, therefore, are faced with tough legal and ethical challenges vis-à-vis e-pharmacies.

Many of the old legal and ethical provisions have become useless because of Internet and thus, introduction of new provisions in drug laws is required urgently to plug the loop-holes created by On-line transactions.

Already the dishonest operators have misused IT to indulge in illegal and unethical practices. One of the worst violations unfortunately involved an Indian family. A news report in *The Statesman* (The Statesman 2005) informed that Dr. Brij Bhushan Bansal provided banned drugs illegally to 200 websites that promoted them and collected the payment through credit cards

There are other legal and ethical issues also. *Internet Pharmacies Consumer Protection Act,* of USA provides following guidelines to regulate e-pharmacies.

1). **Permission to function**: Those e-pharmacies should only be allowed to function which possess the valid licenses; are run by professionally qualified people and which have physical existence.

2). **Ownership**: On the web pages there should be a clear statement of ownership and operation of the pharmacy.

3). **Display of list of legal e-Pharmacies**: A list of legal e-pharmacies must be displayed by the suitable drug authorities on their web-sites as well as advertised widely to the public so as to clearly differentiate between the legal and illegal e-pharmacies. Such a list should be regularly updated.

4). **Scrutiny of the information on web pages of e-Pharmacies**: The information on web-pages of e-pharmacies must first be carefully studied/scrutinized and then certified by competent drug authorities before the operator is permitted to put it on Internet. The site must be password locked and each change/modification/up gradation of web page must be allowed subject to another certification.

5). **Assignment of Certification Logo** : The aforesaid policy may be further strengthened by a procedure under which drug authorities may assign a " certification logo" to the certified operator and which may be displayed on the respective homepages. In case, specified standards

are not observed by an e-pharmacy, the logo may be removed unilaterally.

6). **Requirement of Information about Instructions to Use, Store and Effects of Drugs**:

e-Pharmacies must provide information on how to take prescription correctly (time, dose, sequence, method, any special precaution). There should be information about proper storage, possible side effects, possible allergic reaction, and possible drug-drug food interactions. While people should be encouraged to avoid OTC drugs, they should be given dietary instructions, possible adverse drug-reaction etc.

7). **E-Pharmacies and Self-medication**: e-Pharmacies are not free from risks. It may lead to self-medication. In order to avoid any untoward incidents, e-pharmacies must include a "no-warranty" clause that clearly states "*information given is not meant to diagnose, treat, cure, or prevent any disease. No warranty is made that any information on or linked to this site is complete and / or accurate. Information contained on the site, including information relating to medical and health conditions, products and treatments, is for informational purposes only. Professional advice is required for each particular illness, disease, infection, injury or other medical condition and for dosages of pharmaceutical products supplied via this site. The consumer takes full and total responsibility for what he does with this information.*"

8) **Dispensing Drugs Against Electronically Sent or Faxed Prescriptions**: e-pharmacies should not dispense drugs against electronically sent or Faxed prescriptions. Rather, medicines should be issued against original authorized prescriptions only. This, however be a transient measure because Internet prescription may soon be legal. Once the physician, pharmacist and patient are integrated in a secure electronic environment, the entire transaction would be safer and more transparent than as it is today.

9) **Selling Drugs Against Valid Prescriptions**: Considering the strong possibility of abuse of a few drugs, such drugs should not be allowed to sale through e-pharmacies.

10) **Selling Medicines Outsides the Country**: e-pharmacy may sell drugs outside the country provided a physician practicing in the same country issues the prescription.

11) **Restriction on E–Pharmacies vis-à-vis Quantity of Medicines**: e-Pharmacies may sell medicines maximum for a three-month dosage.

5. Promotion

Training and Development of Sales Persons

Pharmaceutical marketing has rightly been called a knowledge-based marketing Industry. As a heavily regulated sector with a vast sales-force base often remotely located, the Pharmaceutical industry presents the right characteristics to get significant benefits from e-learning. It is ultimately the better knowledge of drugs and diseases that results in successful marketing.

Being a knowledge-based industry implies learning centered organization. Not only people have to be learned they must keep on learning also. Thus, teaching and training the sales force is the key operation for any pharmaceutical organization. Ms Jane Chin, Ph.D., President, Medical Science Liaison Institute, is involved in training medical representative. In her mail she writes;

"Part of the sales force ineffectiveness has to do with the training of the sales force, although hiring practices do play a role. Most of the sales trainers are former sales representatives "moving to the next level" in the corporate ladder, rewarded with such a stepping-stone for having done a good job as a rep. These trainers have access to OK-to-good selling tools, but poor clinical competency programs. Some of these trainers have sound scientific competence, but not always to the level required to fully explain the science behind the glossy binders or the concepts behind the gimmicky quips. You don't teach adults to learn complex clinical science by rote memorization (at

least not without pain), and you certainly can't convince even primary care physicians of your credibility by a menu of clever counter-objection scripts.

I believe that the less time you have with a physician, the more knowledge and comprehension you must have about the disease state you're representing through your product. That will get the rep to almost approximate the "assembly line" decision making process primary care physicians with 50 patients to see a day make on a regular basis.

I've gone through sales training that falls short on the application and even shorter on the science. Having "carried the bag", I agree that the rep experience is valuable for business skills, but it's mostly "what you're told to do, and what you need to do in a real business situation."

I'm hoping to make a dent in educating reps in scientific concepts and clinical process with the Clinical Side I write monthly for pharm rep magazine, but from some questions I receive from reps, we have a long way to go to impart scientific competence to our sales force."

Today, companies are investing a fortune in the training of the employees. Pharmaceutical selling involves interaction of the medical representative with the highly qualified specialists and the super-specialists of the medical profession. Hence, they are supposed to be well versed with the technicality involved therein.

Traditionally training in pharmaceutical industry too is lecture centered. However, information technology has brought winds of changes that have transcended learning and training to an entirely new sphere. CD presentations, learning on a laptop, etc have started coming up in a big way. Many companies are investing in creating websites and interactive sites that would enable easy learning.

Use of IT for Teaching and Training Sales Force

The IT based learning can be of different types depending upon the types of technologies involved as also the level of learning itself: They are

a) **Distribution Technologies**: This type of learning is based on transfer of information, rather than on its interpretations and analysis. Transfer

of information using CD or floppies etc. are a part of this level of learning technique. It could be in a classroom scenario or distance education mode. This is said to be instructor centered. It is based on multimedia. It has the advantage over traditional lecture system that it suits our complex perception and communication behaviour. It provides immediate access to information banks. Multi media integrates written, spoken, visual or even animated material. Thus, making it more learner friendly.

b) **Interactive Technologies**: Involves use of Telephone, FAX or email. It allows a learner to progress at his own pace towards the goal of skill acquisition. Thus, information is not just received but interpreted also. Communication between learners and the teacher existed but between learners, it is non-existent. In other words, here technology is meant to just bridge the geographical space. This is said to be learner-centered technology.

c) **Collaborative Technologies**: This is also known as on-line education or network based education because all the players are connected via a computer network. It not only allows transfer and interpretation of information but also analysis and discussion also. Here even learners are able to communicate with each other. This is said to be *learning team-centered*. It lays emphasis on thinking skills. Collaborative technologies help to develop complex skills like creative thinking, problem solving designing and decision-making abilities in the learner. Online learning allows managers to construct lessons and tests, build subject libraries, track employee progress and deploy specific lessons to the desktops of individuals and teams It is based on constructivist theory that holds that knowledge has to be discovered, constructed, practiced and validated. It makes use of chat-rooms, electronic message box and video-conferencing. Mostly these are web-based. The bases of web-based education are as follows:

i. Network is its back bone

ii. Technology is a key component

iii. Communication gives it life

iv. It is learning team-centric

Table 38 reflects the type of teaching technology that is being followed in companies under study.

Table 38: Type of Teaching Technology Followed

S.No.	Name of Company	Type Of Teaching Technology In Use
01	02	03
1	Pfizer	Collaborative
2	Aventis	Collaborative
3	Organon	Interactive
4	Kopran	Distributional
5	Lupin	Interactive
6	Ranbaxy	Interactive
7	Orchid	Interactive
8	Franco-India	Distribution
9	Almet	Planned
10	Khandelwal	Distributional
11	Baidyanath	Distributional
12	Indian Herbs	Planned
13	Transflex	Nil

From the information provided in Table 38, it is obvious that industry is taking keen interest in using information technology to train their sales force. The larger and better-organized organizations are using more advanced technologies. Others are still onto the lower sphere of technologies because of financial constraints. Also, it appears that collaborative learning requires some experience to make its implementation successful. It also requires tremendous preparatory work to be successful. It may become the norm a decade later when learners will be friendlier with the technology.

According to Mr. Ramgopal of Aventis, Medical Representatives have to be moving organization today and therefore their lifelong education cannot be ignored. He believes that IT-based-learning is essential not just for bringing

down the cost but also for the imparting higher quality of education. In his 30 year long career in training the MRs he found that being adults they are different types of learners and hence the pedagogy used in schools and colleges is not effective for them. He insists:

i. Adults do not learn as capably as children or adolescents do in a classroom-teaching format.
ii. Adult learners are much more self-directed.
iii. They bring vast amount of practical experience to learning.
iv. They favor immediate application of the principle learnt to test it and consolidate the gains.
v. They are more comfortable with performance-centered rather than subject-centered training.

According to him IT based education is more adult-friendly.

Impact on Training Time-Duration

Table 39 provides the impact of Information Technology on training time duration.

Table 39: Impact on Training Time Duration

S.No.	Company	Impact on Training Time-Duration
01	**02**	**03**
1	Pfizer	No Impact
2	Aventis	No Impact
3	Organon	No Impact
4	Kopran	No Impact
5	Lupin	No Impact
6	Ranbaxy	No Impact
7	Orchid	No Impact
8	Franco-India	No Impact
9	Almet	-
10	Khandelwal	No Impact
11	Baidyanath	No Impact
12	Indian Herbs	No Impact
13	Transflex	No Impact

Information given in Table 39 Interestingly provides that the training duration before the advent of IT tools and now has remained the same. The reason lies in the fact that learning is human centered and by nature a slow process. The quality of learning can be improved but not necessarily the speed to learn.

Changes in the Frequency of Training Sessions

Table 40 depicts the changes in frequencies of training sessions. of Medical Representatives of the companies under study, brought by Information Technology tools.

Table 40: Changes in Frequency of Training Sessions

S.No.	Company	Changes in Frequency of Training Sessions
01	02	03
1	Pfizer	Increased
2	Aventis	Increased
3	Organon	Increased
4	Kopran	No change
5	Lupin	Increased
6	Ranbaxy	Increased
7	Orchid	Increased
8	Franco-India	No change
9	Almet	-
10	Khandelwal	No change
11	Baidyanath	No change
12	Indian Herbs	No change
13	Transflex	-

We expected training schedules to be held less frequently because of possibility to train and learn over network. But results given in Table 40 are just to the contrary. Such sessions are held more frequently particularly in organizations that have made major investment in IT. The reason is that the need to impart knowledge has enhanced considerably. Today more products are being launched than ever before. The level of knowledge that is required

to convince a physician has gone much higher. Strategies have seen a major shift from mass marketing to micro marketing. This implies a better knowledge of human psychology, tailored solution to different physicians and a good knowledge of IT tools. To achieve this, training needs have naturally enhanced. Otherwise IT has definitely made an impact in reducing the class room sessions.

Change in Cost of Training

Table 41 depicts changes in cost of training to MRs of the companies under study after using Information Technology.

Table 41: Changes in Cost of Training

S.No.	Company	Changes in Cost of Training
01	02	03
1	Pfizer	No
2	Aventis	No
3	Organon	No
4	Kopran	Marginal
5	Lupin	No
6	Ranbaxy	No
7	Orchid	No
8	Franco-India	Marginal
9	Almet	-
10	Khandelwal	No
11	Baidyanath	No
12	Indian Herbs	No
13	Transflex	-

Traditional classroom sessions require massive traveling expenses, Lodging & Boarding expenses etc. These costs are eliminated when studying over the net. Therefore it was expected that these costs would come down drastically. But this has not happened. There are many reasons for the same:

a) The initial costs involved in organizing IT infrastructure and also preparation of study material over net is an expensive proposition. In time to come this may come down. Such courses can be easily recorded for future use without any expense. But training experts believe expenses would remain high in future also because of the intensity and complexity of knowledge is increasing.

b) As already indicated in the previous discussion the need to hold training sessions has increased many folds. Company with most knowledgeable sales force will be most profitable also. Thus, training and development would be the key operations in pharmaceutical companies of tomorrow and training cost will be very high.

Future of Lecture Room Training-Sessions

To an enquiry, whether or not lecture room training session will exist in future, the responses are shown in Table 42.

Table 42: Future of Lecture Room Training-Sessions

S.No.	Company	Will Class-Room Sessions Disappear?
01	02	03
1	Pfizer	No
2	Aventis	No
3	Organon	No
4	Kopran	No
5	Lupin	No
6	Ranbaxy	No
7	Orchid	No
8	Franco-India	No
9	Almet	No
10	Khandelwal	No
11	Baidyanath	No
12	Indian Herbs	No
13	Transflex	No

From the Table 42 it is evident that classroom sessions will remain in future also. Companies are finding that Learning Management Systems are not an effective replacement for classroom training because the essential social dynamic of the classroom cannot be replicated on-screen. Nevertheless, these are proving to be valuable for reinforcing classroom lessons and incrementally adding to the knowledge base of employees.

Thus, online learning/continuous learning will support the classroom sessions. The sales team gets together not just for learning but also to instill a spirit of competition, cooperation, enthusiasm, and challenges. These can happen only in a class room sessions. Also skills cannot be taught on network. But analytical and creative skills will overwhelmingly be taught through on-line learning methodology.

However, the researcher believes that pharmaceutical companies are looking favourably at IT based training for sales. The findings state that pharmaceutical companies have acknowledged the potential presented by e-eLearning and training of medical representatives was clearly the focus area of eLearning solutions.

A report in DQ Week mentions that Satyam Education Services (SESL), a leading eLearning solution provider and a 100 percent subsidiary of Satyam Infoway, has partnered with US-based GeneEd to offer eLearning programs in pharmaceuticals and biotechnology sciences. GeneEd is a leading provider of both life science eLearning curricula and client-proprietary scientific eLearning.

Training of sales person, therefore, is one area that will be greatly modified under the influence of IT.

Detailing

Marketers world over are delighted at the prospect of interacting directly with their customers with the advent of Internet and other tools of information technology. This is particularly true for pharmaceutical marketing. One of the expectation is to replace the army of medical representatives with a virtual sales force. This prospect is tempting because maintaining hundreds and thousand of medical representatives are exorbitantly uneconomical. If a

dialogue with a physician becomes possible without affecting the market the pharmaceutical marketing would heave a sigh of relief. e-detailing has brought this dream to the realms of possibility. Electronic detailing generally implies an extensive range of on-line or electronic promotional activities.

Looking at the enthusiasm e detailing has generated, the researcher carried out studies to comprehend e-detailing at following two levels.

1) Global Trends of e-detailing

2) National Trends of e-detailing

1) Global Trends

Following observations emerged from the study vis-à-vis e-detailing:

Geographical variations in its application and success:

Mark Schmükler, comments - e-Detailing is being done today by most of the major Pharmaceutical firms in US. Other American experts agree to this perception. However Peter Llewellyn from Europe informs that e-detailing surely not as routine in Europe as yet.

2) Replacement of Face-To-Face Detailing:

No where in the world face-to-face detailing is replaced with e-detailing completely - not even in US. Mark Schmukler and Mark Bard, comment that it is not possible as yet. Thus, It is apparent that he believes that in future it may become possible. An article entitled *Take-off for e-detailing?* which appeared in Pharmafocus dated July, 03, 2003 predicts a bright future for e-Detailing. It says:

"The promise of e-detailing tends to be that it will be cheaper and more effective than using traditional field-based sales representatives. There is a greater potential for targeting particular segments of the doctor population and therefore companies can better design their fleet of detailing materials for maximum effect. Moreover, it can provide a 24 hrs. a day/7 days a week, open-all-hours accessibility and convenience – allowing e-details to be viewed by doctors at home when their working day ends – that field-based reps cannot compete with".

3) **US Success Indicates Prospects of Success of E-Detailing In Other Countries Also** With more and more people joining the digital world e-detailing should be more popular in other countries also.

4) **Size of the Company Makes a Difference**: As suggested by Mark Bard a few small and niche companies are making disproportionate (compared to larger companies) for e-detailing. This because they can't compete with the sheer number of detail MR big pharmaceutical companies have employed.

5) **It Complements Traditional Detailing**: Surveys conducted in US confirm that it complements face-to-face detailing extremely well. According to Peter Llewellyn it is particularly useful under following situations:

    a) Increase frequency on high prescribers

    b) Reach low prescribers

    c) Contact Remote, non targeted, and open territories

6) **Many Models of E-Detailing are Being Tried Out**: e-detailing has many faces. Broadly speaking it has five approaches:

    a) e-Detailing that is carried out by a visiting MR at the Physician's chamber using Internet and other facilities during routine visits. Here e-detailing is merely a support to the face-to-face detailing.

    b) e-Detailing with the MR talking to the doctor over phone while the doctor looks at the e-details over Internet or multimedia

    c) Sometimes the Physician views the e-detail independently of the sales rep altogether.

    d) E-Detailing is performed during a conference wherein leading Physicians are invited.

    e) Doctors initiate the interaction by visiting prominent disease-websites and Pharmaceutical company-websites to collect whatever information they need. For any further information or to provide more specific details the company responds to the physicians' questions.

7) **New Models Emerging to Encourage and Involve Physicians for e-Detailing Programmes**:

In US companies have come out with a few models to encourage the physicians to participate in e-Detailing programmes:

a) A Physician visiting a company site is rewarded monetary benefits. This model has rightly been criticized for its unethical nature.

b) To contain its unethical character pharmaceutical companies proposed to set an upper limit beyond which no monetary compensation is paid.

c) However even this modification was not considered sufficient and a debate is going on to declare it illegal. A few companies have preferred to reward physicians entering their sites with gifts rather than money. Their argument is that since gifts to physicians have always been a part pharmaceutical marketing they should not be considered unethical for e-Detailing programmes.

d) Many disagree with them. They propose to reward physicians with medicine samples.

e) A very successful model tried upon physicians with deep sense of social responsibility is that every time they enter the web site of the company, the company donates a certain amount for a social cause.

The list is suggestive. Many such models are being tried out and successful models are kept confidential programmes.

8) **It is More Successful with Specialists Than With General Practioners:** According to Paul McNiven, Managing Partner, Strategyst Consulting, initial e-detailing successes are more associated with specialists rather than general practitioners. The reason lies in the fact that it is the specialists for whom latest information in a structured format is more critical.

9) **It Has Met With Resistance Also**: Like any new development e-detailing is resisted and denounced. The first recorded resistance pertains to a complaint by an anonymous GP who protested to the ABPI's Prescription

Medicines Code of Practice Authority about an e-detail for GlaxoSmithKline's Avandia in US.

10) **There are Critical Factors in its Success**: There is nothing intrinsic in e-detailing that makes it successful. Ross Weaver, believes that the critical factors e-detailing success are as follows:

a) Sales team support

b) Real benefits to the customers

c) Faultless IT execution

d) Interesting content and communication

e) The hurdles to entry are low but the learning curve is difficult and important

National Trends of e-detailing

Pharmaceutical companies are under tremendous pressure to bring down their marketing costs. Costs are high due to large sales force of highly trained medical representatives that a pharmaceutical organization requires is

E.W. Boehm and J. Fisher J. believe **e-detailing** holds such a promise. According to an internal report of *Astra Zeneca* the real sales force of our time will be replaced by virtual sales team. If this comes about Information Technology would have changed the face of Pharmaceutical Technology absolutely and irrevocably.

The only instance, where a large company survived without its large sales force is of Cipla. In late 1990s Cipla scrapped off entire sales team of a few hundred medical representatives because of their unreasonable demands and hostile attitude. Pundits of Pharmaceutical marketing looked upon with keen interest because this was the reality check for the massive sales force pharmaceutical companies have to live with. The end result was ambiguous. Cipla came out unscathed. Its gross sales remained on the upswing. But step-by-step they replaced the previous sales team with a new one. This new team was qualitatively different. It had younger faces with a large number of them being females who were better educated. Marketing

executives of Cipla do not consider their approach a failure, as it was not there ever their objective to operate without a sales force.

During the time of this transition Cipla communicated with physicians through bimonthly leaflets. They also organized Doctors' meet in important cities to appraise the doctors about Cipla products, their benefits and announcements related to launch of new products.

Ms Priti Mohile informs that for certain cases the sale rose by 50%. This was because the physicians now received samples and information brochures regularly.

We have mentioned this case study because this experience hold the seeds of creating a pharmaceutical marketing structure minus the massive sales team which appears to be indispensable as of today.

An organization has far better options to communicate now due to the IT tools.

Technically speaking, e-detailing is the digital equivalent of a MRs visit, using Internet-enabled technology in the product detailing process to supplement and reinforce other offline investments. e-detailing uses the Internet to promote products among medical professionals.

The ubiquitous nature of Internet, in theory, provides access anytime, anyplace and anywhere. This means that the busy healthcare professional can receive information whenever they want and that too in the comfort of their own home when they are far more likely to be receptive to it.

We have already seen that the companies amongst the ones studied for this work that are experimenting with e-detailing in India are

a. Pfizer India Ltd. (Substantially)

b. Aventis (Substantially)

c. Organon (Partially)

d. Lupin (Partially

e. Ranbaxy (Substantially)

f. Orchid (Partially)

The survey for this research work (Interview Schedule-I) reveals the following:

Investment Pattern of Research and Development Activities in Last 7 Years

Detailing, if as successful as was anticipated should reduce the need for intensive R&D activities. Table 43 portrays the recent changes in R&D investments in firms being studied.

Table 43: Recent Changes in R&D Investment

S.N.	Company	Change In R&D Investment
01	02	03
1	Pfizer	Increased
2	Aventis	Increased
3	Organon	Increased
4	Lupin	Increased
5	Ranbaxy	Increased
6	Orchid	Increased

Table 43 shows that investment in R&D in companies that have invested heavily in IT has increased rather than being decreased as was hypothesized.

Projected Changes in R&D Investment

So far R&D has remained intensive in these firms. But, under the influence of IT, such investment in R&D may fall in future. Table 44 reflects the projected changes in R&D investment.

Pharmaceutical marketing is said to rests on R&D and large sales force. The answer the researcher tried to find was if e-detailing could help in reducing the costs involved in R&D and maintaining large sales force.

From the information provided in Table 44, it is obvious that that e-detailing is not expected to make any corresponding reduction in R&D investment.

Table 44: Projected Changes In R&D Investment

S.No.	Company	Future R&D Investment Pattern
01	02	03
1	Pfizer	Higher
2	Aventis	Higher
3	Organon	Higher
4	Lupin	Higher
5	Ranbaxy	Higher
6	Orchid	Higher

Sales Turnover and Size of Sales Force Deployed

The sales turn over and size of sales force deployed by the firms under this study are shown in Table 45.

Table 45: Sales Turnover and Size of Sales Force Deployed

S. N.	Company	Sales Turnover (In Rs. Crores)	No.of MR deployed
01	02	03	04
1	Pfizer	558.96	550
2	Aventis	790.40	600
3	Organon	337.00	300
4	Lupin	890.00	1200
5	Ranbaxy	1187.00	1600
6	Orchid	699.00	400

From the table 45 following observations are evident:

a) Sales turnover is more or less directly proportional to the number of medical representatives employed. Higher the turnover one wants to attain more medical representative are required to be deployed

b) Aventis and Pfizer have always been known for their marketing strength. Further questioning revealed two points:

i. Their marketing executives found it difficult to pin point the exact increase in sales that can be attributed to use of e-detailing.

ii. It is their past experience as marketing specialists that indirectly confirm the utility of e-detailing for marketing their products.

iii. They argued strongly that e-detailing is useful. The competitive advantage, according to them, may not become obvious now but in future it will not only make a difference but will seen to make a difference.

The Approximate Change in Number of Medical Representatives

IT, it was suggested, will render huge sales force obsolete. If this was true, size of sales team should have fallen. Table-46 shows percentage change in number of medical representatives deployed in 2004 as against in 1997.

Table 46: Percent Change in Number of MRs Deployed (1997-2004)

S.No.	Company	% Change In Number Of MR
01	02	03
1	Pfizer	+40%
2	Aventis	+30%
3	Organon	+70%
4	Lupin	+75%
5	Ranbaxy	+90%
6	Orchid	+ 75%

It is evident from the information given in Table 46 that size of sales force has increased since 1997 and not decreased as was hypothesized.

Further enquiry brought out some interesting facts:

a) 90% increase in the sales force of Ranbaxy can be very well explained by its market growth. Increase of its market share coincides with increased sales force. The story is more or less the same for other companies. It is highest for Ranbaxy as it has grown the most. The growth of sales force follows intensive as well as extensive pattern. In

Mumbai alone, for example, Ranbaxy has deployed 40 medical representatives, the highest by any company.

b) Aventis and Pfizer have actually reduced the size of their sales force by about 7-8% in last two years.

Possibility of Replacing Sales Force with Technology

Size of sales force has increased despite use of IT tools. Thus, prediction of future of such sales force need exploration. Table 47 reflects the possibility of replacing sales force with technology.

Table 47: Possibility of Replacing Sales Force with Technology

S.No.	Company	Response
01	02	03
1	Pfizer	No
2	Aventis	No
3	Organon	No
4	Lupin	No
5	Ranbaxy	No
6	Orchid	No

Information given in Table 47 shows that companies have no plans to reduce sales force. The prophecy that e-detailing will replace sales force is proved wrong because of the wrong logic it was premised upon. Marketing is an intensely human-oriented discipline. It can never become technology-centered. Marketing is too complex and unstructured (unlike back office activities like production planning, inventory control, supply chain logistics) that it will always be based on human intelligence, initiative and enthusiasm. Reduction in sales force of Aventis and Pfizer is also considered "optimization".

They have no plans to reduce cost of keeping a sales force. "We will reduce numbers but enhance their emoluments to attract and hire the best in industry" they assert. According to Mr. Kallianpur of Pfizer, "In future pharmaceutical marketing will follow the same pattern that we are witnessing with the armed forces. Till two decades back the country having most

number of soldiers was believed to have the best army also. During this period USA and USSR had the armies with largest manpower. But now every country including India is trying to transform colossal armed forces of past into a "Lean and mean" outfit which will be smaller in numbers but more lethal in terms of weapon they carry and the strategies they adapt. Similarly in future the pharmaceutical company with the largest sales force may not be the best also. Rather companies with lesser number of but well paid and knowledgeable sales force will reign supreme. The medical representative of future will be different from the one that we find now. He will not only be well versed in his area of expertise offering distinct outcome advantages to physician but will be more empowered and will be in a sound position to understand the real needs of his clients (physicians). In other words the sales force of today will be replaced by the *science force* of tomorrow."

Structural Changes in Sales Force

To fully comprehend the impact of e-detailing on size of sales force following information was also collected. The marketing hierarchical structure of a pharmaceutical firm consists of six tiers. Medical representative being the lowest level, followed by District Manager, Area Manager, Regional Manager, Zonal Managers and National Managers in that order. If using tools of information technology can reduce this hierarchical structure, substantial reduction of cost will be possible. Table 48 shows recent changes in hierarchical levels of sales force.

Table 48: Reduction in Hierarchy Levels of Marketing Organization

S.No.	Company	Reduction In Marketing Organization Levels
01	**02**	**03**
1	Pfizer	No
2	Aventis*	No
3	Organon	No
4	Lupin	No
5	Ranbaxy	No
6	Orchid	No

Information provided in Table 48 shows that IT tools have not resulted in reducing marketing hierarchical levels of pharmaceutical companies.

Mr. Ram Gopal of Aventis India feels that in future they may do away with the post of District manager and sometimes even area manager so that the medical representatives in future will directly report to the regional manager.

From the information collected and the discussions held it is obvious that e-detailing like many other technologies have evoked larger-than-life expectations from the marketers. If marketers thought they have found the ultimate medium to communicate with physicians and encourage them to prescribe their product. However, all such expectations have been belied. Every marketing executive, we talked to, disagree with this perception too. According to Mr. Salil Kallianpur of Pfizer "after the bouts of disappointment of its apparent failure is digested, e-detailing is found to have immense merit. It does complement the traditional sales force extremely well by filling up the dotted lines. It is a good tool under certain circumstances. For example:

a) For reaching out to physicians located in far-flung areas that the regular sales force cannot serve as frequently as they would want to. Mr. Ram Gopal of Aventis India told that there are at least 50 such physicians located in cities like Gangtok, Silchar , Dibrugarh etc. who have requested for e-detailing sessions regularly. He expects with increasing penetration of Internet technologies more and more such physicians will be there, thus, e-detailing is yet to find its true potential.

b) To make contact with physicians who have refused to meet the medical representatives.

c) To get in touch with physicians who are very much at home with online communication. These are the early adopters of technology and understandably the younger lot. Such people have no hesitation to use technology whenever needed. In fact e-detailing is natural to them. It is expected that number of such persons will increase in next few years.

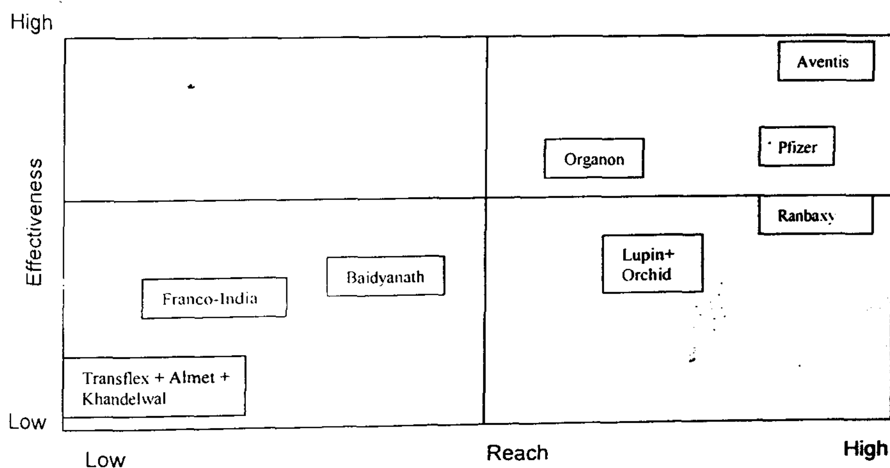
d) To touch upon physicians located where medical representative is unavailable. Smaller companies do not have resources to reach out to physicians of each and every region. So far they serve only limited

markets and make no effort to touch upon physicians of practicing beyond their sphere of operations. Now such physicians can be reached. Even larger companies complaint that the turnover of medical representatives is high. As a result at any given moment there will be a few unmanned territories. During such phase of paucity e-detailing is an ideal medium. Mr. C. Ashok of Aventis confirms that many of the heavy prescribers of their drugs have high appreciation for the efforts they took to reach out to them via e-detailing.

e) To reach out to physicians who are low prescribes or perhaps even zero prescribers. Should a medical representative waste time trying to convert a non-prescriber to prescriber or low prescriber to high prescriber? General consensus is that the cost involved in making such efforts is invariably much more than the profits gained. It is well known fact that to gain a new customer one has to make four times more effort than retaining an existing one. In past this meant that non-prescribers to be ignored completely. e-detailing today provides us with a low key channel to not to shut out such physicians completely.

An approximate performance of various companies on a Reach-Effectiveness matrix vis-à-vis e-detailing is given in Diagram 6.

Diagram 6: Approximate Position of Various Companies on Reach Effectiveness Matrix vis-à-vis E-Detailing



From the above it is obvious that e-detailing extends definite advantages. In addition it is a good tool to support traditional efforts. Following case study confirms such a view:

Researcher came across a few interesting instances related to e-detailing. A case as informed to the researcher by Mr. C. Ashok of Aventis India was regarding the use of e-detailing as a supplement to the efforts of regular team of marketing representative. The product that was promoted was an anti-allergic drug that had been in the market for about 12 years, yet accounted for less than 4% of market share. To a certain extent its demand was seasonal. The company was looking for a low cost approach to enhance its acceptability in the market. e-detailing sessions as a supplement to the sales team promotion appeared to be sound solution. An improvement of 1.56 times over the pre-campaign level was observed after just two e-detailing sessions.

E detailing is still in its infancy, The difference it can make is yet to be measured.

Willingness and Preparedness of Physicians' to Participate in E-Detailing Programmes

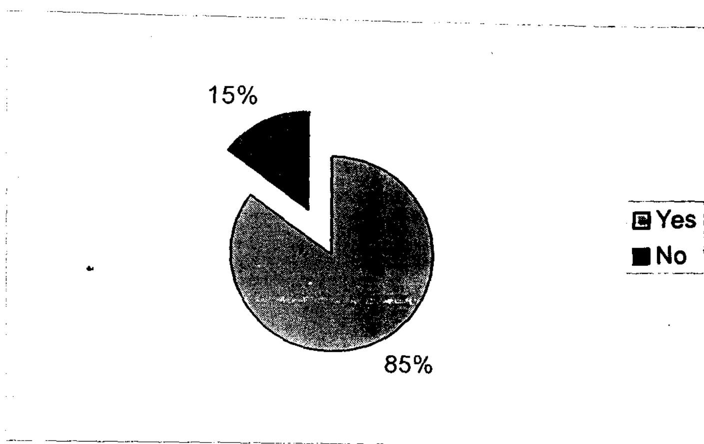
Approaches such as e-detailing presume the readiness and willingness of physicians' to embrace principles and practices of information technology. If Physicians are unwilling to use tools of IT the pharmaceutical companies can not use concepts like e-detailing. Following are the results of the survey (Interview Schedule-II) conducted on physicians to measure their willingness and preparedness to participate in e-detailing programmes.

Prevailing Usage of Internet by Physicians

The prevailing usage of internet by physicians is shown in Graph-1.

Graph-1 shows that 85% physicians use Internet. The number is certainly very high and will be much higher than average percentage of Internet use.

Graph 1: **Prevailing usage of Internet by Physicians**

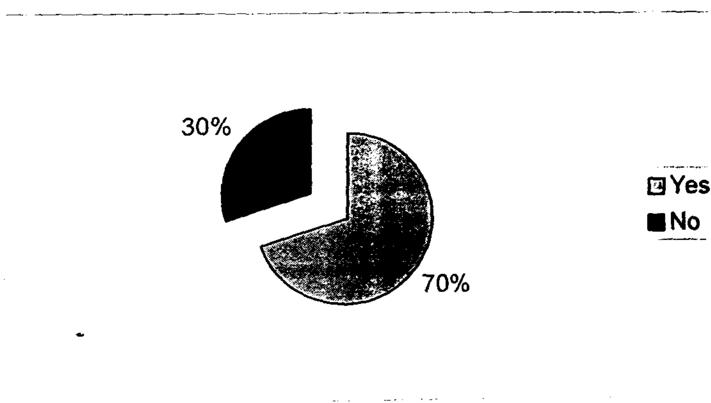


This high penetration should be good news for companies that want to build Internet as a tool for detailing their products. Physicians who are still not using Internet are perhaps still unsure and hesitant about using computers and Internet. It will be worth the effort to encourage such physicians to begin using Internet and if required, then even provide training sessions.

Use of Internet by Physicians' For Professional Purposes

Prevailing usage of internet for professional purposes by physicians' is shown in Graph 2.

Graph 2: Prevailing Usage of Internet for Professional Purposes by Physicians

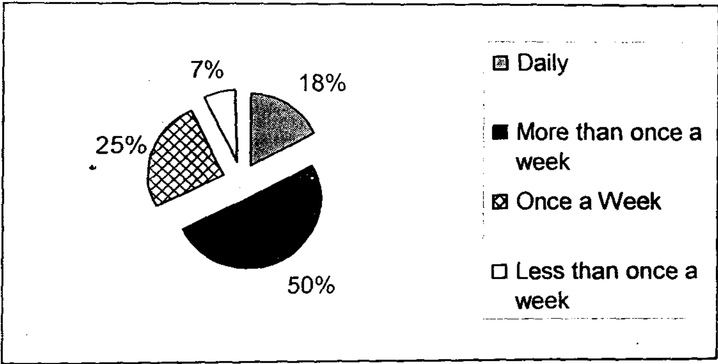


Graph 2 shows that not every physician uses Internet for professional reasons. This is natural considering the fact that Internet has many other potential uses. However, physicians who are using it for personal reasons will be willing to use it for professional purposes also provided pharmaceutical companies are able to convince them of its benefits. If e-detailing is desired by pharmaceutical industries, they must identify such physicians and help them understand the worth of Internet for seeking professional information

Frequency of Use of Internet for Professional Purposes by Physicians

Graph 3 depicts the details of frequency of internet usage by the physicians for professional purposes.

Graph 3: Prevailing Frequency of Usage of Internet for Professional Purposes by Physicians

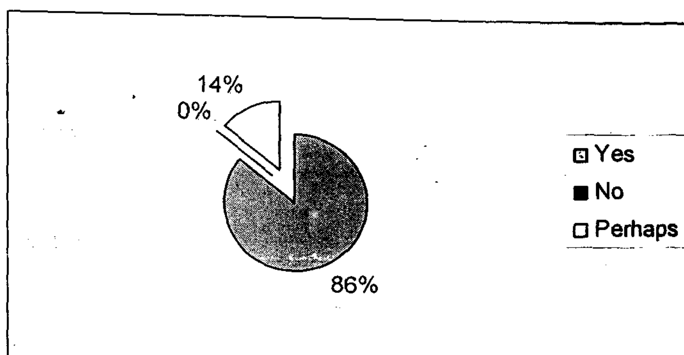


Graph 3 reflects that almost 68% of the physicians use Internet daily or more than once a week. This shows that gradually the physicians' community is getting much more comfortable with Internet related technologies. Since their information requirement is extremely high, it is expected they will log on to Internet more and more in future.

Increase in Usage of Internet in last 3 Years by Physicians

It is anticipated that with increasing familiarity, the frequency of internet usage by physicians will also grow. This aspect is shown in Graph 4.

Graph 4: Increase in Usage of Internet in Last 3 Years by Physicians

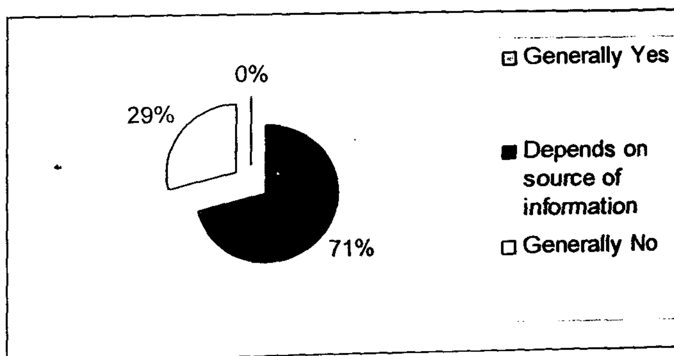


Graph 4 confirms the hypothesis that the rate of usage of Internet by physicians to refer to professional information on internet is increasing. It is expected that in another ten years it will be substantially high for the pharmaceutical companies to plan out e-detailing strategy for majority of physicians.

Trustworthiness of Internet-originated Information

Physicians will tend to use internet more and more if they consider it trustworthy. Prevailing trust on internet-originated information is shown in Graph 5.

Graph 5: Prevailing Trust of Physicians on Internet-originated Information

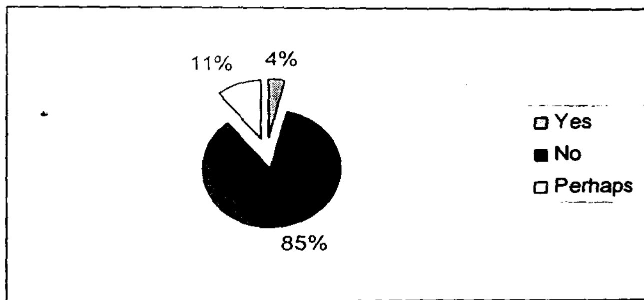


Graph 5 confirms that physicians are aware of the potential of misuse of Internet to provide unauthentic and untrustworthy information. But 71% are pragmatic enough to not to accept or reject Internet in totality. Pharmaceutical companies aspiring to implement e-detailing strategies must encourage skeptical physicians to learn to accept or reject information on the basis of integrity of source.

Sharing of email Address with Medical Representatives

For a dialogue to begin over internet companies need to have email addresses of physicians. Willingness of physicians to share their email address with medical representatives is shown in Graph 6.

Graph 6: Willingness to Share Email Address with Medical Representatives



Graph 6 indicates that 85% physicians will not share their email address with an MR. This is a telling comment on perception of ethical behaviour of MR. Internet provides an extremely inexpensive means to communicate any amount of information. But ethics demand not to overwhelm any one with disproportionate, unwarranted and unnecessary information using this facility. Reluctance of physicians, to share email address with pharmaceutical companies, stems from the misuse and abuse of the same when it was done earlier. The email accounts of such physicians were flooded with information. Such a behaviour shows that pharmaceutical companies do not have respect for physicians'. In future companies.

i. Should not try to collect email addresses aggressively

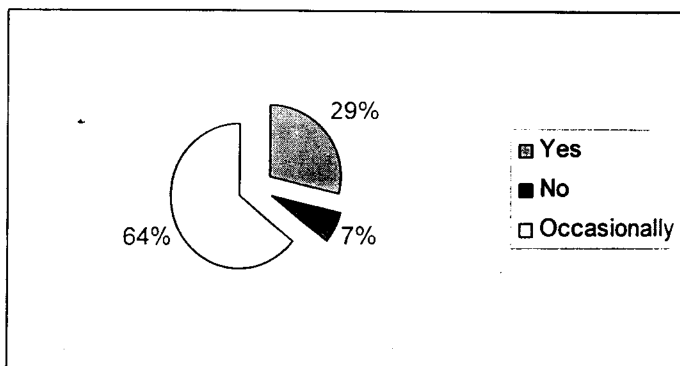
ii. Keep the address confidential

iii. Should not flood physician's email folder with excessive and useless information

Willingness to Establish Responsible Two-Way Online Communication

Physicians feel betrayed at the hands of MRs. The possibility to overcome this feeling of betrayal and willingness to establish a responsible two-way online communication is explored. Results are shown in Graph 7.

Graph 7: Willingness to Establish Responsible Two-Way Online Communication

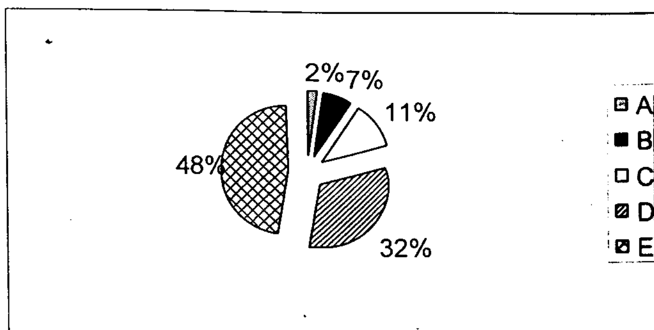


Graph 7 reflects that physicians need information. It should be heartening for the pharmaceutical companies to hear that the initial problems physicians faced have not made them hostile against receiving information through email. Most are willing to have information through emails provided it is within the realms of "civilized" norms.

Preferred e-detailing Model

There exists several models of e-detailing. Physicians' preference was identified. Results are shown in Graph 8.

Graph 8: Preferred E-detailing Model Amongst Physicians



A. e-Detailing that is carried out by a visiting MR at the Physician's chamber using Internet and other facilities during routine visits. Here e-detailing is merely a support to the face-to-face detailing.
B. e-Detailing with the MR talking to the doctor over phone while the physician looks at the e-details over Internet or multimedia
C. Physician views the e-detail independently of the sales rep altogether.
D. E-Detailing is performed during a conference where in leading Physician's are invited.
E. Doctor's initiate the interaction by visiting prominent disease-websites and Pharmaceutical company-websites to collect whatever information they need. For any further information or to provide more specific details the company responds to the physician's quires.

Graph 8 shows that there is an overwhelming preference amongst physicians for e-detailing models where they are empowered to receive information of their choice rather than having information that is pushed down to them. The four principles that the companies should adopt in this respect are:

i. Encourage physicians to take initiative to search information. If required train them to search information. During subsequent discussion with physicians it became apparent that most do not know how to search information on net effectively.

ii. Provide only concise, valuable, current and relevant information targeted to the needs of individual physicians.

iii. Provide information that makes positive clinical differentiation and which positions products based on health economic benefit.

iv. Empower physicians to control the frequency with which they can access information.

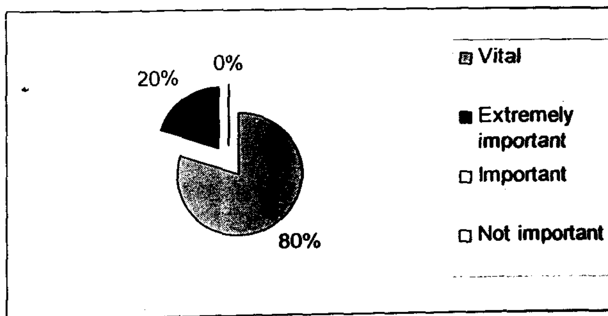
E-Detailing Possibilities for Physicians Who do not Meet Medical Representative

During discussion with marketing executives it was suggested that perhaps e-detailing could be useful to reach out to physicians who do not meet Medical Representatives. Though such physicians are not large in number, yet reaching out to them could make a real difference. A survey (Interview Schedule-III) involving such physicians was conducted to ascertain possibilities of providing information to them via e-detailing. 80 such physicians were identified with the help of medical representatives of various companies and their views are ascertained. The details of the study are as follows:

Importance of Up-to-date Information for their Profession

Internet provides information. MRs also provide information. One hypothesis could be that Physicians do not meet MR as they do not need any professional information. Graph-9 provides details of whether or not physicians who are reluctant to meet MR feel the need for up-to-date professional information.

Graph 9: Prevailing Perception of Importance of Up-To Date Professional Information



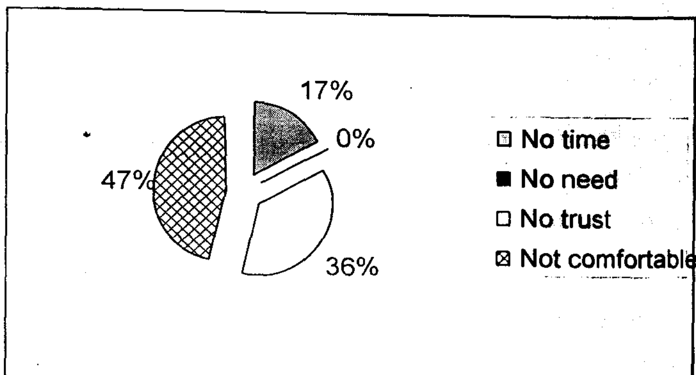
Graph 9 shows that all the physicians consider the professional information vital or extremely important. They prefer to depend upon journals and conferences. They actively consult their colleagues as and when the need

arises. Thus, pharmaceutical companies should win over such doctors by establishing the credibility of e-detailing and make it convenient.

Major Reasons For Reluctance To Meet Medical Representatives

As it has come up that physicians do feel the need for information, therefore, reasons for their reluctance to meet MRs are identified and depicted in Graph 10.

Graph 10: Reasons for Reluctance to Meet MRs



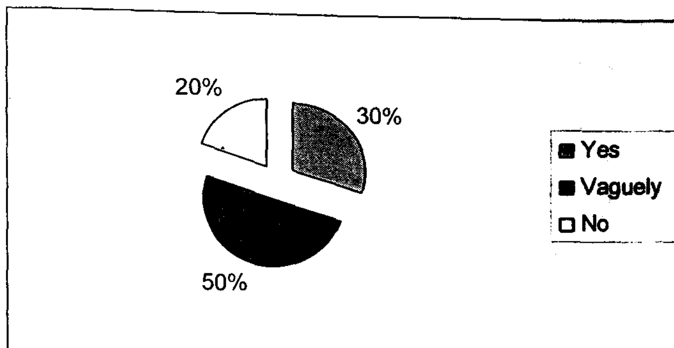
The pharmaceutical companies assume that such physicians are very busy and also they do not need support. Therefore, they do not meet medical representatives.

83% of such physicians are reluctant to meet medical representatives, because of lack of trust or a feeling of discomfort. Pharmaceutical companies that send large number of unethical, ill-trained, ill-informed medical representatives must shoulder the blame. Lack of time is true but not a major reason to shun the medical representatives. Accessing information at their leisure time and at their initiative does seem to be an attractive proposition to them.

Familiarity with E-Detailing

It was also important to find out the awareness level amongst such physicians vis-à-vis e-detailing. Graph 11 projects the e-detailing awareness levels amongst such physicians.

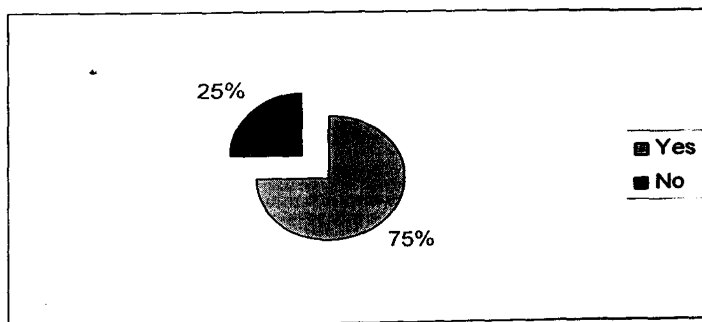
Graph 11: Prevailing Familiarity with E-Detailing Amongst Physicians Reluctant to Meet MRs



Graph 11 shows that 70% of such doctors either know nothing about e-detailing or at best have a vague, idea about it. Such physicians should be approached in an unconventional way and made aware of e-detailing and the opportunities it presents.

Access to Internet: Even if such Physicians are willing to experiment with e-detailing, they still need access to internet. Graph 12 shows the access to internet amongst such physicians.

Graph 12: Access to Internet amongst Physicians' Reluctant to Meet MR

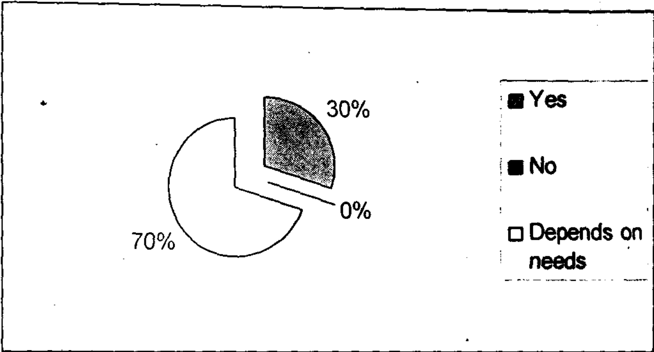


Graph 12 reveals that 75% of such physicians access Internet. Thus, already an important barrier is overcome.

Willingness to Participate in e-detailing Sessions

Such physicians are familiar with e-detailing and have access to internet but their willingness to receive online information is to be explored. Graph 13 provides the result of this investigation.

Graph 13: Willingness amongst Physicians' Reluctant to Meet MR to participate in e-detailing Sessions

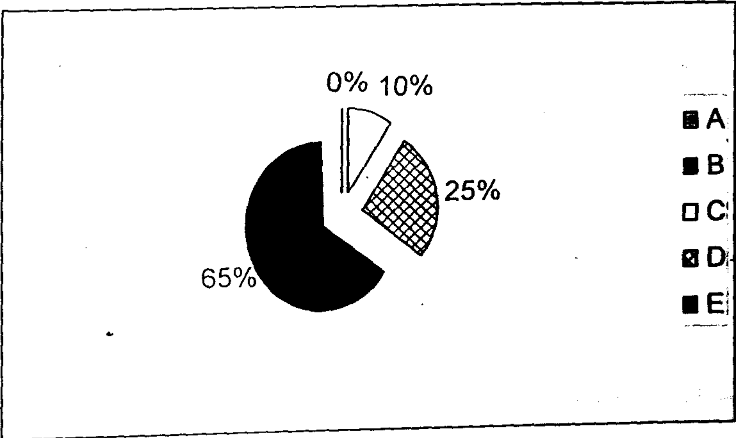


Graph 13 shows that 70% physicians are willing to participate in e-detailing sessions. Pharmaceutical marketer can take comfort from the fact that none of such physicians considers e-detailing offers as unviable propositions.

Preferred e-detailing Model

The preference of e-detailing model for such physicians is explored and shown in Graph 14.

Graph 14: Preferred e-detailing Model amongst Physicians Reluctant to Meet MRs



F. e-Detailing that is carried out by a visiting MR at the Physician's chamber using Internet and other facilities during routine visits. Here e-detailing is merely a support to the face-to-face detailing.
G. e-Detailing with the MR talking to the doctor over phone while the physician looks at the e-details over Internet or multimedia
H. Physician views the e-detail independently of the sales rep altogether.
I. E-Detailing is performed during a conference where in leading Physician's are invited.
J. Doctor's initiate the interaction by visiting prominent disease-websites and Pharmaceutical company-websites to collect whatever information they need. For any further information or to provide more specific details the company responds to the physician's quires.

Observations from Graph 14 confirm that there is an overwhelming preference for models that allow physicians to initiate the dialogue rather than the models that give large amount of information.

C-Detailing – An Alternate Tool for Pharmaceutical Marketers

If e-detailing was meant for the physicians, marketers have a tool to reach out to the patients and physicians alike through C-detailing. An important development with e-technologies is reintermediarization or establishment of new intermediaries in the marketing cycles. C-detailing also is founded on involvement of one such type of intermediary.

It all began in June, 2005 when Medsite, a website to support healthcare initiatives entered an agreement with Yahoo! to launch its first Consumer detailing (C-detailing) portal - an Internet based educational programme that makes available the most up-to-date drug information to Yahoo users. This information was earlier available only to physicians.

Industry experts are quite enthusiastic about it as they believe it is powerful and a versatile tool that can

i. Provide comprehensive information
ii. Target a specific audience
iii. Allow Interactive communication with the audience
iv. Personalize and customize the communication

The number of people visiting Yahoo! And other similar portal sites has already crossed 100 million. Further, greater inclination that people are

showing in learning more about health issues will definitely make such an attempt successful.

Video and Web-Conferencing

To enhance communication with physicians, pharmaceutical companies have begun to organize conferences. Such conferences are expensive because of traveling costs, logistics related costs etc. Thus, only large companies can afford them. Information technology has provided tools to conduct such conferences very cheaply. Video-conferencing and Web-conferencing are two such important tools. They help in conserving time, effort and money.

The web-conferencing approach is revolutionary as it transforms the medical representative from the an information provider to a facilitator scheduling educational activities. This new approach revolves around a web-conference arranged for important physicians (opinion leaders). Medical representatives get in touch with important physicians of their area and at a pre-decided time web-conference is held. Very often it is organized during the lunch hour to save time. Such sessions in USA, therefore, are known as "Lunch and Learn Sessions".

Well-known doctor or researcher addresses web-conferences. The talk is generally about disease management or simple sharing of clinical experiences. It is an interactive session where physicians are allowed to submit questions/doubts/comments through voice mail or online chat. The only accessories required are a standard PC or a laptop and Internet access.

Web-conferencing provides following advantages to medical representatives:

i. Access to Physician is exclusive.

ii. They secure better credibility, as speaker is a neutral expert.

iii. Medical representative spends quality time with physicians

iv. The satisfaction level (relevance of message, effectiveness of the speaker, level of content etc.) can be easily measured using extensive surveys and reporting components.

v. Change in prescription writing behaviour can be measured.

According to Ms Lori Spellman *of Maxwell group* of USA, her organization organize almost 20 conferences every day. About 50 physicians attend each conference on an average. Further, such web-conferences can be easily recorded and archived for 24 hours a day – 7 days a week viewing.

Detailing and Web-Conferencing: a comparison

The important points of differences between detailing and web-conferencing are as follows:

a) While the message in detailing is restricted to a brand, in web-conference it is directed towards disease management.

b) In detailing the speaker is medical representative while a key opinion leader and a respected expert in that field speaks in web conferencing.

c) In detailing only one physician at a time listens to the message, whereas in web-conferencing many can listen to the message. Consequently the cost per physician is extremely low for web-conferencing.

d) An important aspect of learning is that it is much more effective when learners can interact and share with each other, rather than interacting with the teacher/trainer only. Whereas detailing eliminates any possibility of peer learning, Web-conferencing on the other hand is full of such opportunities.

Web conferences can be conveniently recorded for future use – repetitive use that too at extremely low costs. Smaller companies that did not have the capital to organize live seminars are enthusiastic about the arrival of web-conferencing.

Based on the experiences of *Maxwell Web Conferencing Service*, a caution that needs emphasis is that there are no short cuts. Such conferences can thrive only on truth. If used as a mere marketing propaganda they will soon lose their credibility and may even invite legal sanctions and punishment. Success of this mode is founded upon a judicious blend of people, process

and technology that brings into being a platform that supports large-scale, profitable, and cost effective eMarketing and eLearning events.

Information Intermediaries

An interesting development the researcher came across is the emergence of information intermediaries. Sensing the predicament physicians and pharmaceutical marketers are facing these is a new type of service providers. Their emergence is still in infancy having taken roots barely two years ago.

G. Shankarnarayan informs of one such service provider. Chennai based Pharma Call Private Limited, has come up with an innovative solution for the pharmaceutical companies to augment and improve the customer reach and strengthen customer relationship by offering ***Pharmareach,*** a first of its kind inbound call center service. Pharmareach facilitates pharmaceutical companies in providing scientific and promotional information about their medicines/drugs and medical equipment to doctors and pharmacists over phone and internet.

The concept is simple. Any physician requiring specific information about a drug, a disease, adverse drug reaction etc is encouraged to call the Pharmareach facility over phone or Internet. The call centre is open 24 hours a day and seven days a week answers his queries appropriately.

To achieve this, call centre encourages the pharmaceutical companies to become its bona fide member. Thereafter, the company provides the call centre with necessary information/literature about its products. The pharmaceutical company gets an all India toll free number, which the pharmaceutical company popularizes amongst its panel of doctors, executives and pharmacists. The customers, on dialing the toll free number at their convenient time, can get the necessary information over phone from the Pharma Call executives. The call centre provides details about the actual calls handled from various destinations every month. Thus, measuring the outcome of efforts including the ROI becomes possible. According to Sivaramakrishnan, Chief, Operations of Pharmareach the key is the information-economics. They at one stroke have created the cheapest

medium to reach physicians with accurate and uniform information on drugs, medicines and medical equipment at "physicians' convenience".

In other words, companies have begun to outsource the information sharing operation to such call centers. This is very much consistent with the business process outsourcing culture prevailing today.

Sivaramakrishnan, believes they are only trying to bridge the dotted line existing between physicians and pharmaceutical companies. They in fact, plan to extend support to the existing sales force of the pharmaceutical companies to enhance their knowledge, preparedness and effectiveness in communicating with doctors during drug detailing.

Delhi based Apothecaries Pvt. Ltd. via its pool of professionals available to deliver information on any pharmaceutical aspect of a company's product including its pharmacology, pharmacokinetic profile, known Adverse Drug Reactions, prescribing information, etc. to the physicians.

Another one is the Mumbai based Prescription Pharma Support (PPS) which supports continuing medical education, new product launches, market research, pharmaceutical and allied exhibitions. They have gained substantial expertise in organizing knowledge based seminars.

Emergence of such call centers appears to be natural and is believed to go a long way in strengthening the communication link between pharmaceutical marketers and physicians.

Distribution of Samples

A time-tested and proven promotion tool is distribution of pharmaceutical samples (Rx samples). The most effective way to have a positive impact on physicians is to gift product samples. Physicians appreciate the availability of samples for their patients and they distribute the samples to appropriate patients. Patients appreciate the product's benefits and respond as customers.

Marketers generally acknowledge that the distribution of drug samples is one of the most effective ways of influencing prescriber behavior. Well-designed clinical studies support this long held belief, pointing to a high association

between drug sample dispensing and simultaneous prescribing of the same brand-name drug.

Samples are also important as they allow physicians to test the efficacy and the benefits proclaimed by pharmaceutical marketers.

But sampling is a costly affair. It does not involve just the cost of the sample but also the cost of distribution. Traditionally the medical representatives distribute samples. But the cost of one visit is extremely high, thus, the distribution cost is substantial.

We have an alternative method to reach out to the physicians with drug samples. A new web-based channel, eSampling (electronic sampling), has begun to enthuse pharmaceutical marketers. This they believe can solve many of their drug sampling problems. The concept has not yet reached India but is common in developed world.

A Physician can seek sample coupon from the website and give it to the patient he deems fit to receive it. The patient can pick up medicines against the coupon from the nearest pharmacy shop.

Thus, the need to visit physicians who are located in remote and far away places to hand over samples is reduced. It also has the added benefit of reaching the important physicians. It is useful to reach out to physicians:

i. Who are heavy prescribers

ii. Who have the potential to be high prescribers.

iii. Physicians located in places where temporarily or permanently a company is unable to reach.

However it will not replace traditional sampling, as samples are the most important reasons a physician agrees to meet the medical representative.

Customer Relations Management

CRM is particularly relevant for Pharmaceutical Industries as the major boost to sales of pharmaceutical products come from the influence of physicians who are numerous but finite. Even before the advent of IT tools pharmaceutical marketing was driven by CRM approach in a sense the

personal relations of company MRs with physicians played central role in marketing pharmaceutical products.

Pfizer and Aventis from amongst the industries that were studied for this project are doing pioneering work in this area. Amongst others Dr Reddy's Lab, Glaxo, Sun Pharmaceuticals, Novartis etc are doing lot of work in developing CRM with customers.

Pharmaceutical companies used IT tools initially to record birthdays of physicians. Birthday cards were sent to the physicians.. Then came a flurry of competitive activities and cards were given at various occasions. Valentine Day, Birthday, Marriage Anniversary, Mother-in-law's day, Doctor's Day, Wife's, children's birthdays etc.. Physicians were not impressed as they could sense that such gestures lacked any genuine feeling. Cards were soon replaced by sweets, then gifts and then even more expensive gifts. It did not help increase sale of the pharmaceutical products.

Wise companies learnt quickly from these failures. Pharmaceutical Industry cannot imbue relationship marketing without offering top quality products that are affordable, effective and also provide service to Physicians, retailers and end-users.

Companies like Pfizer and Aventis pioneered programmes that looked upon physician as a human being first . Human beings crave to succeed, not just professionally but personally also. Therefore, these pharmaceutical companies began to organize various competitions to bring out the talents of physicians. This include activities such as:

i. Drawing contest
ii. Best Article
iii. Cricket/Hockey/Tennis/Badminton Competitions among Physicians
iv. Drama Contest
v. Singing Contest.
vi. Best clinic award

vii. Providing passwords to medical journal websites as also for viewing clinical research data

viii. Free Journal Subscription

ix. Organizing symposia for exchange of serious thought process that facilitates updation of knowledge

x. Sharing of CD and Cassettes pertaining to medical science

xi. Book Publication or Distribution of books written by physicians.

xii. Sharing medical slides. This improve the relationship with doctors who have academic bent of mind

xiii. Patients pocket information booklet. These are particularly important for treating life-style drugs that are chronic and more than medicine require precautions.

xiv. Health camp followed by lecture series by leading physicians to the patients

Such activities are not expensive and are looked with respect. Their profession demands that they be suitably respected by society in general and patient community in particular.

Information technology made successful relations management campaigns possible. Computer and networks bring the revolution in CRM to us. Database marketing involves understanding customer thoroughly, knowing his prescription habits very closely, comprehend his perception and motives and then crafting products and messages tailored to his needs and wants.

Thus, a major decisive sphere of modification would be the use of information technology for rebuilding database on each specific physician. An electronic database offers the most complete information profile on the perception, personality and needs of the physician. This provides means to build up a strategy for relationship marketing. A networked information system monitored by properly trained personnel is the essence. It enables the marketer to foretell and respond promptly to the requirements of specific physicians.

Success of CRM strategies in India

Marketing Executives of both Aventis and Pfizer have found CRM useful. For a certain segment Aventis reports increase in sales by 213%. But the successful cases are rare. Their efforts to streamline CRM strategies begin on high promise but soon high cost and low returns put a damper on the hard work.

Mr. Michele Lombardo, Business Development Manager, Alliance Consulting has provided with an insight to the problems. An excerpt of his mail explaining the issue is hereunder:

We've found that sales force automation is really not a competitive advantage unless enabled through capabilities, processes and methods that integrate and correct existing customer information into existing systems without rebuilding them, and provide continuous integration of new internal and external information into these systems. Additionally, customer data must be harnessed across an Enterprise to build an environment where demographic, geographic, buying patterns and interrelationships are visible and actionable.

While most traditional CRM systems capture interactions with individual customer touch-points efficiently, they afford limited illumination of a company's entire customer universe because the data derived are insufficient unless combined with broader customer information from other sources, and integration of new, supplemental and corrective data must be a continuous - not a one-time - process. Additionally, the sheer number of internal and external systems that Pharmaceutical companies rely on to capture customer data poses operational challenges. These data silos often contain partial, redundant, or conflicting customer information. Inaccurate data quickly becomes a costly problem for companies as they dispatch their selling and detailing teams inadvertently to the wrong Customer locations, or send out expensive product samples to incorrect addresses. Complicating the situation further is the fact that no single system has demonstrated either the capacity or the structure to evolve into a single authoritative customer-information repository.

Our approach is to build CRM upon a scalable and extensible foundation with two separate requirements - an overall blueprint for the future vision of the project, and existing and new data analyses performed in three distinct stages:

Stage 1: Managing Prescribers - consists of integrating multiple silos of prescribers' information into a single, comprehensive view, eliminating redundancies to minimize misplaced sample drops and improve compliance, thereby reducing operating costs.

Stage 2: Managing Affiliations - Includes compiling data from all companies affiliated with prescribers in order to create a more comprehensive view of the client's customer universe. Together, these two stages provide a framework to improve price planning, target organizations better for product inclusion on formulary and facilitate contract negotiations and rebates.

Stage 3: Managing New Information - continuously integrates new and supplemental (internal/external) customer information in order to identify and market more easily to higher-value prescribers and accounts, allow more effective identification and definition when targeting most profitable customer segments, and distinguish improved customer service as a competitive differentiator. By adopting a continuous information-seeking posture, companies improve their understanding of interactions with each segment of the value-chain constituency. This insight is then applied to tailor new product offerings to better meet customers' requirements, create more profitable interactions and utilize existing investments in customer information to yield a better, more intimate understanding of customer needs.

One important dimension of CRM is time. The balance between customer needs, values and costs are fleeting. Customer life events and competition among other factors are constantly altering customer preferences and values. An ongoing discipline ensures today's investment allocation decisions are based on today's data

Thus, CRM cannot be successful by just using tools of information technology – but by their systematic, creative and imaginative use. But have no doubt it is possible and it is certainly the future.

Also, there are no shortcuts with CRM. It demands creativity, innovation; a thorough understanding of consumer behavior and above all it demands every customer to be viewed as a distinct market segment. All this calls for hard work. Physicians above all look for information that caters to his clinical needs - adds to his professional competence, refines his ability to diagnose and provides him with safe and effective therapy to treat his patients."

CRM Approach Versus Brand Marketing

Mr. C. Ashok of Aventis believes that both are complementary to each other and one can never be the substitute for other. Thus, when a product is launched and product awareness is an issue brand marketing driven by mass marketing tools will be more useful, whereas to drive action CRM would be the ideal option. In other words brand marketing is useful to modify attitude and perception but CRM modifies behaviour. These differences translate into their use for different clinical problems. Brand marketing assists in high prevalence diseases such as allergies whereas CRM is useful for targeted markets with complex therapy such as oncology.

An *article in Dataquest* informs of use of ***mobile phone SMS*** in eCRM solution for sales force, to obtain quick market feedback and fine tune sales strategy by Orchid pharmaceuticals. This was used in the anti-infective formulations division. Its applications have also provided support to good manufacturing practices and compliance to regulatory requirements as well as manage and control costs in product development. The company also plans to embark on collaborative commerce post 2007. Several companies including Lupin, have taken guidance from Orchid for their IT implementation.

Direct To Consumer Communication (DTC)

Tools of information technology that is, Computer systems, Internet, telecommunication, cellular phones, fax machines wireless appliances, bring enormous reduction in costs of communication and time to communicate and

encourage companies to shift over to personalized and targeted communication to the patients and encourage one-to-one dialogue.

Communication in Pharmaceutical Industry is a delicate issue. Traditionally promotion of medicines is done only to qualified physicians and not to the patients. S.C. Mahajan, B.M. Mittal and M. Kuchekar, say that any attempt to promote prescription drugs - on mass media or directly to the patient - is considered unlawful and invites punishment under Drugs & Magic Remedies Act. However Over-the-counter drugs such as analgesics and antacids are being promoted through mass media and other means. By all indications Government would like to make laws discouraging such promotions even more stringent. Many companies have begun to misuse IT tools to promote their products directly to the patients. A case in point is Diclofenac (promoted by Win-Pharma), which despite being a prescription drug was advertised blatantly.

John Mack has shown a lot of enthusiasm vis-à-vis future prospects of tools of IT for DTC communication . While discussing Internet opportunities he makes following observations:

i. 60% of US consumers use the Internet to research healthcare topics.
ii. Websites are now the number one source of information about healthcare.
iii. 90% of consumers find pharmaceutical information online
iv. 40% of consumers do research before making a decision on an OTC or prescription product.

Through the Internet, the capacity of being better informed on health and medication is well within our reach. Reliable medical websites are enhancing the general public's knowledge of health and disease, and making everyone more aware of how their bodies' function and how to take better care of them.

To learn more about health sites providing information to patients, a search was made of the relevant web sites on Internet. From information collected such web sites can be divided into eight categories. They are:

1. **Websites Providing Medical Information**

As the name suggests such sites provide general medical information, are highly technical and are generally meant for healthcare professionals. These are extensive but not very intensive. Examples of some such sites include:

a. http://www/Healthlibrary.com

b. http://www www.medlineplus.gov

c. http://www www.Qmedin.com

d. http://www .medclik.com

2. **Websites Providing Information about General Health**

These web sites are less technical in approach and are meant for general public. They dwell less in technicalities and more on helpful guidelines to support therapy and improve life-style in terms of health. A few examples of such sites include:

a. http://www.intelihealth.com

b. http://www.webmd.com

c. http://www.healthylife.com

d. http://www.indianhealthcarefederation.org

3. **Websites Sponsored by Pharmaceutical Companies**

Pharmaceutical companies support these websites. They provide information about the company, its infrastructure, products and the disease areas they specialize in. Most such sites provide financial performance of the company also. Most well known companies have their distinct websites. A few important websites are as follows:

a. http://www.indswift.com

b. http://www.organon.com

c. http://www.aventispharmaindia.com

d. http://www.pfizerindia.com

e. http://www.ranbaxy.com

f. http://www.merck.com

g. http://www.lupingroup.com

h. http://www.cipla.com

4. **Websites of Diseases Sponsored by Pharmaceutical Company**

Such sites focus upon specific diseases providing details such as its etiology, manifestation, symptoms, complications, precautions, medication etc. As a pharmaceutical company supports these, it is not surprising to find subtle bias in favour of their products. These are intended for physicians as well as patients. A few examples of such sites include

a. http://www.ranbaxy.com/aidonaids.htm

b. http://www.pfizerindia.com/health_hy.html

c. http://www.psychiatrymatters.md

d. http://www.andropause.com

e. http://Allegra.com

5. **Web Sites of diseases for Patient Groups**

These sites are similar to the previous one in details. But as these do not have any commercial interest and exist for reasons other than monetary, they are not biased towards any product or any pharmaceutical company. These are meant for physicians and patients both. Some good examples of such sites include:

a. http://www.arthritis.com (Supported by Arthritis Foundation)

b. http://www.heartcentreonline.com

c. http://www.diabetes.com

d. http://www.diabetesLife.com

e http://www.alzhemir.com

6. **Websites Based on Specific Pharmaceutical Products**

Such sites are generally supported by pharmaceutical companies and provide information about specific product. The details also include

information about the disease and the corresponding support therapies. These too are meant for both – physicians as well as patients. Generally these are about chronic diseases such as Asthma, Diabetes. Hypertension etc. hence patients' perspective is obvious in their tone and tenor. A few examples include:

a. http://www.amaryl.com
b. http://www.arava.com
c. http://www.andriol.md
d. http://www.implanon.md
e. http://www.viagra.com
f. http://www.allegra.com

7. Websites On Drug-Drug Interaction, Adverse Reactions And Other Clinical Issues

Medication today has become very complicated. Earlier there were few diseases with known symptoms, less number of drugs, less drug-drug interactions. Today diagnosis is based on tests. Patients have a legitimate reason to know about the nature of disease, its intensity. medication, possible adverse drug reactions etc. They also look for expert opinion about unusual results of the tests. Such information can be had from sites such as follows.

a. http://www.safemedication.com
b. http://www.rxlist.com
c. http://www.labtestonline.org.

8. Websites Of Medical Associations

These sites provide information for qualified physicians Apart form information related to medicines and disease they also provide details related to legal and ethical issues. A few examples include.

a. http://www.healthfinder.gov (provides links to sites of medical association)
b. http://www.mciindia.org

c. http://www.indianradiologist.com

d. http://www.cchindia.com

Every positive development has a negative dimension also. All websites on Internet are not honest, reliable and trustworthy. Rather there is a heavy onslaught of sham, insincere and dishonest sites. Thus, it is advisable to seek information from peer-reviewed, non-commercial sites, preferably those certified by a recognized and reputed body.

Website of M/S Aventis India Ltd. – A Detailed Study

Of the companies studied for this work Aventis India and Pfizer India Ltd. are using Internet and other elements of IT to educate patients about a disease. A careful and detailed study of the website of Aventis India was carried out as it was found to be most comprehensive, up-to-date and progressive. Aventis, as we already know, has specialized in drugs related to anti-infectives, metabolism, cardiology/thrombosis, respiratory, CNS, bone/joint and oncology. It supports site that are disease-drug specific

Table 49 shows the websites of Aventis ,supporting communication to patients and the physicians:

Table 49: Websites of Aventis Supporting Communication to Patients and Physicians

S. No.	Address of Site	Disease for Which Information Provided
01	02	03
1	http://www.Amaryl.com	Diabetes
2	http://www.Allegra.com	Allergy
3	http://www.Arava.com	Rheumatoid Arthritis

Important features of the site include the following:

i. Information in different languages (Telugu, Hindi, Oriya, Tamil, Bengali, Gujarati, Marathi, Kannada)

ii. An overview of the disease providing details such as Basics, Diet, Exercise, Complications and Disease Management tools

iii. Important details such as effects of high or low dose; drug-drug interaction; drug-food interaction; adverse reactions; sensitivities: side effects.

iv. A fair and scientific assessment of how does the drug compare with other drugs.

v. Useful links and online diabetics resources for further information.

vi. Search Engines

vii. Details of how to select a physician and region-based list of physicians along with their addresses and other contact points

viii. Region based list of distributors dealing in that drug.

ix. Forum for patients to communicate to each other. However information is edited before it is displayed or communicated to ensure the scientific sanctity.

x. Mechanism to collect feed back from site-visitors including further information, suggestions and complaints if any.

The researcher has also come across *Amaryl club* and *allegro site* that are the platforms for the patients having corresponding disease to share their experiences.

Result of The Survey on DTC Communication

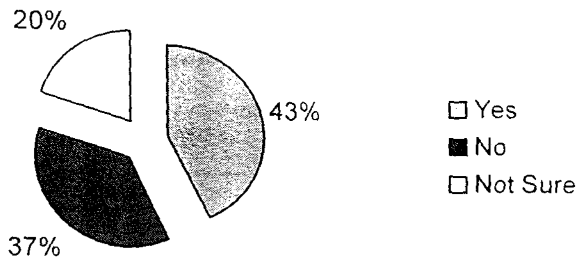
Following are the results of the survey (Interview Schedule-II) conducted on physicians to assess their views on DTC communication.

DTC Communications are Unethical

DTC communication may lead to unethical behaviour and practices. Physicians' views in this respect has been depicted in Graph 15

It is interesting to note, that a large number of physicians' believe that direct-to-consumer communications are ethical. Some even believe that an informed patient is mature and cooperative as well as he follows medical advice properly.

Graph 15: Physicians Response : DTC Communications are Ethical

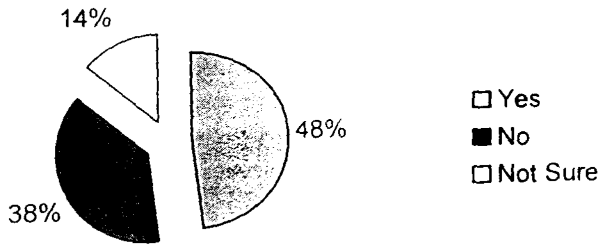


A large number of physicians (37%) on the other hand, feel it is unethical. The reason behind such a belief is a feeling that this may result in a changed equation between the physician and the patient and patients may begin to direct the physician to prescribe a particular drug. However they opine that number of such patients would not be more than 3%. A small percentage, 20% of physicians are not sure but they believe DTC is not unethical but it has the potential to be misused.

DTC Communications Improve Quality of Physician-Patient Interaction

DTC communication may improve quality of physician-patient interaction. Physicians' responses in this respect are shown in Graph 16.

Graph 16: Physicians' Response: DTC Communication Improves Quality of Interaction with Patients

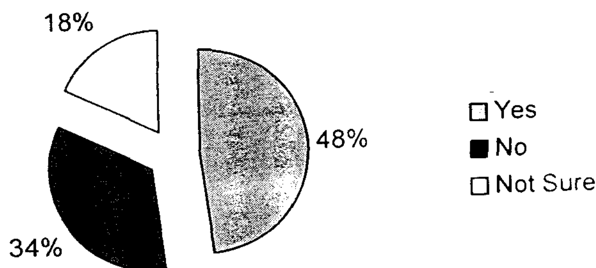


It is observed from Graph 16 that 48% physicians believe DTC communication improves quality of interaction with patients. Almost all the physicians who felt DTC-communication is ethical also believe that interaction with a patient improves with DTC communication. It is so because disease awareness promotes thoughtful discussions with physicians. 38% of the physicians believe that DTC does not improve the quality of interaction with patients. This is so because according to them patients are not competent enough to understand medical and pharmaceutical information properly. A small percentage (14%) is not sure about impact of DTC on patient interaction.

DTC communications Improve Drug Compliance

DTC communication may improve drug compliance. Physician's responses in this respect are depicted in Graph 17.

Graph 17: Physicians' Response: DTC Communication Leads to Better Compliance

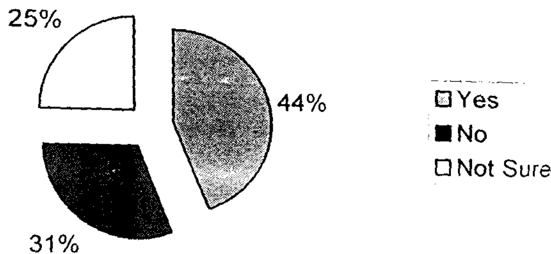


It is observed that 48% physicians believe that DTC communication improves drug compliance. Understandably, it is same physicians who view DTC communication ethical also. What should dismay pharmaceutical marketers, however, is the observation that 34% physicians do not feel that drug compliance can be improved through DTC communication. This is because they believe that drug non-compliance is due to reasons other than lack of knowledge on the part pf patients.

DTC communication Encourage Self-medication

DTC communication may encourage self-medication. Physicians' response in this respect is shown in Graph 18.

Graph 18: Physicians Response: DTC leads to Self-Medication



It is observed from Graph 18 that 44% physicians feel that DTC communication may encourage self-medication. A few physicians who support DTC communication believe that self-medication may actually reduce because of DTC communication. They point out that all the websites and other online communication clearly state that the opinion of a physician is a must before taking a drug. Thus, authority of a physician to decide remains unchallenged. Pharmaceutical marketers on the other hand reason that self-medication is not necessarily bad. They believe its positive aspects outweigh its negative ones. In the absence of any knowledge people ignore their ailments or resort to unscientific remedies.

Most marketers inform that budget for this medium is hardly 1-3% of the overall market budget. But they point out that it is a low cost option and in future, once important lessons have been learnt, it will not cost much to add on to it.

The ROI of this medium so far is moderate. Most marketers foresee a greater investment in technologies and operations supporting DTC communication.

Marketing executives of Pfizer and Aventis inform that most visited disease websites are Cardiac ailments; Asthma; Diabetes; Neuropsychiatry; Osteoporosis and Antioxidants

The list throws up an interesting proposition. All these diseases have three shared features. They are

a) All are *chronic ailments* which cannot be cured but which can be kept under control using regular medication and by observing proper diet and exercise.

b) Drugs of these diseases belong to a common category of drugs called *life-style drugs*. The term life-style implies that such diseases severely affect and restrict the life-style of a person.

c) The market of drugs of all these diseases is growing at a double digit pace. In fact market for diabeitcs medicines is growing at rate of 20% and that of cardiovascular medicines at 17-18% (Table depicting Growth of Major therapeutic Segments may please be referred). In fact the present growth of pharmaceutical market is as a result of the growth of market for such drugs. Market of traditional medicines such as antibiotics, analgesics, anti-malarials in fact is stagnant or de-growing.

Pharmaceutical marketers believe growth of these markets is not due to information technology alone and following factors have also helped.

a) Transformation of Indian economy from subsisting to developing to almost developed economy has led to higher purchasing power for people. Higher purchase power translated to seeking better health. More money made people more concerned about such diseases.

b) Evolved economy also means an educated people. Better education leads to improve understanding of diseases and the damage they can cause.

c) Better drugs for such diseases are now available. Drugs for chronic ailments are undeniably more effective and have lesser side effects. Hence the patients can feel noticeable improvement when they begin to take such medicines.

d) People are now more aware of diseases. Indeed some time back, patients were not even aware that they suffered from such diseases. Many such diseases are asymptomatic. According to a news item in *Tribune India* as many as 30 million people in India currently suffer from heart diseases. By 2010, 45 million Indians are expected to be suffering from this silent ailment. And by 2015, heart disease is likely to be the single largest cause of death in the country

Nevertheless, credit must also go to the advent of information technology for bringing healthcare providers, pharmaceutical companies and patients closer. This relationship is all set to grow and will be a key to substantial market for pharmaceutical marketers.

Marketing executives from Aventis, Pfizer and Ranbaxy inform that communication is two ways now. A number of patients suffering from life-style disease frequently seek specific information through the "contact" option provided in the web sites. They are in the process of making a data of patients who require support for many years now onwards. This data will help them to customize their offerings on individual basis, thus enhancing the quality of support provided. It is observed that these segments of drugs that are all set to grow will be affected to a great extent by DTC communication.

It is also observed that DTC communication may be misused. Most sites belonging to the well-known pharmaceutical firms have taken every precaution to be careful. Sites essentially provide information and do not attempt promotion of their product. The web site of Aventis, discussed earlier, is a representative sample of other such websites. According to Mr. Ramgopal of Aventis India, any ban on these sites would be unfortunate as this is an important opportunity for pharmaceutical marketers to communicate complete and correct information at a negligible cost to the physicians and patients alike.

In India also we do come across unethical promotion of prescription drugs. Some marketers have begun to target their drugs for make-believe symptoms or for symptoms for which they were not intended at all. UCB

India Pvt Ltd, a pharmaceutical firm began marketing antihistaminic drug. It is a prescription drug. However the company was found to promote the drug in OTC market as appetite stimulant for the children. The researcher has also come across Internet based promotion for prescription drugs that are being promoted for non-medical problems such as "social maladjustment", "lack of alertness", "learning disabilities" etc.

Information technology, like any of the other human creations, can be used as well as be misused. According to Gareth Carpenter the human victory would be to have a legislation that does not talk of banning DTC communication but ensures victory of "high quality" information over "deceptive and low quality" information.

Ethical Issues in Direct-to-consumer communication and Customer Relationship Management

Ethics are more crucial for pharmaceutical industry as its ethical dimensions are more significant than any other industrial /consumer product. Information Technology has opened new avenues and enhanced our capability to be unethical. We, therefore, have to either revise the set of ethics or to formulate a new set of ethics. Unethical practices in pharmaceutical marketing are attracting attention. H. G. Frankfurt makes a scathing attack on Pharmaceutical marketers for lack of substance in their IT based marketing efforts. Pharmaceutical Industry cannot discard the use of information technology merely on the ground that it initiates some unethical practices. We have to extract the advantages of information technology and its application in marketing pharmaceutical products and also to minimize its unethical usage.

Information Technology is generally blamed for unethical practices mainly in two major areas of marketing, namely, Direct to Consumer Communication (DTC) and Customer Relationship Management (CRM). The researcher was more concerned about the arguments put forth by medical and pharmaceutical experts against the use of information technology for marketing pharmaceutical products. Therefore, he has investigated to understand if information technology has really motivated unethical practices

as far as marketing is concerned. Observations in DTC communication and CRM are as follows:

Direct to Consumer Communication

Pharmaceutical firm are very keen to establish direct communication channels with the patient. This was not possible earlier as mass advertisement for prescription drugs is illegal worldwide. Many medical websites exist now on Internet. Websites are beyond the arm of law as it is not possible for law enforcement agencies to ban them. In addition certain pharmaceutical firms also send promotional material to customers online on demand. This is particularly true for chronic diseases such as Asthma, Diabetes, Cardiovascular disorders etc.

The companies find nothing wrong in adapting to such strategies. Responsible communication, according to them, needs to be encouraged rather than banned. Since pharmaceutical companies in USA have been pioneers in use of IT for DTC communication, their experiences and approach gives an idea what is in offing for us. A debate is going on. Some wants DTC communication to be banned. While certain others argue that such bans will be undemocratic and archaic. While some others want clear guidelines to regulate it. A study of US FDA website reveals following important instances of unethical practices by pharmaceutical firms.

a) fosamax.com, a website hosted by **Merck** was indicted on 20^{th} June 2001 to display information that lacked fair balance between the benefits and risks.

b) zdrops.com, hosted by **Novartis** was indicted 18^{th} June, 2003 for making claims of superiority of their products without any evidence to back it.

c) norvir.com, hosted by **Abbot laboratories** was found guilty on 10^{th} June, 2004 of failure to submit update of website.

d) zyrtec.com hosted by **Pfizer** was found to be unethical on grounds of omission of risk information of the product (On 22^{nd} April, 2004)

Other unethical practices observed include

a) Put on view promotional information about drugs still under investigation.

b) Inclusion of obsolete clinical research information.

c) Having links to web pages containing unapproved uses.

d) Displaying exaggerated effectiveness of a medicine.

US government is under pressure to ban DTC communications because of such instances. The industry, on the other hand wants case-by-case judgments rather than a blanket ban on DTC communications.

Pharmaceutical marketing expert suggest industry code of conduct. For example they suggest that DTC communications should have only educational content. John Mack has suggested another radical approach. It is to adopt different policies for drugs having different risk potential. Such a graded approach will help the industry to evolve an appropriate DTC system Thus:

i. **Red Category Drugs**: New drugs and drugs with severe side effects should not resort to DTC communication.

ii. **Orange Category Drugs**: Drugs belonging to earlier category may be shifted to this category after more information is collected about them and some predictions are possible. Highly restricted DTC communication may be allowed under this category

iii. **Yellow Category Drugs**: DTC communication should be monitored for this category of drugs. The site content should necessarily be approved.

iv. **Blue Category Drugs**: This will include drugs with mild side effects. DTC communication may be allowed but only after ensuring that complete information related to side effects is displayed.

v. **Green Category Drugs**: Drugs having no side effects or low risk side effects are included in this category. DTC communication without any

interference may be allowed. Though the host will remain responsible for the consequence of its contents.

Customer Relationship Management

Relationship is based on personal knowledge. It is vital to have clear ethical principles for CRM . Privacy and freedom in the Internet age have to be redefined. *Privacy* is defined as *right of individuals to be left alone* and Freedom as *to be free from surveillance or interference from other individuals, organizations, or the state*. Thus, fair information practices can be said to be a set of principles governing the collection and use of information on the basis of contemporary privacy laws. A few basic principles are

a) Collect and store information only after taking consent of the physicians.

b) Consent given with knowledge of all facts needed to make a rational decision

c) Showing information to physician after it is collected to ensure no objections exist on even minor details.

d) Using the information strictly for professional purpose.

e) Taking responsibility to ensure the confidentiality of the information

f) Sharing of information only after receiving physician's permission.

A study of the medical websites reveals that though responsible pharmaceutical firms follow the basic ethical norms but many others violate ethical norms associated with privacy. The researcher observed that:

a) Many websites use *Cookies* (Tiny files deposited on a hard drive) to identify the visitor and track visits to the Web site without the consent of the visitor.

b) Some pharmaceutical websites contain *Web bugs* (Tiny files deposited on a hard drive) designed to monitor on-line Internet user behavior

c) Some pharmaceutical websites do not provide *Opt-out model* when collecting information.

d) Internet ethical norms reject Opt-out model and recommend *Opt-in model* that does not collect any information till an individual has approved information collection and use.

In fact the evolving ethical issues involve a concept called *P3P - Platform for Privacy Preferences Project*. It is a holistic approach that is meant to develop Industry standards designed to give users more control over personal information.

CHAPTER - FOUR

CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS

CHAPTER - FOUR

CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS

This chapter is devoted to conclusions drawn by interpretation of observations and findings, recommendations for successful applications of Information Technology for marketing pharmaceutical products and suggestions for future researchers.

Information Technology has had a substantial impact on our life style. It has changed the way we look at the world. The new emerging world, shaped and evolved because of information technology, is different in many respects. Though the process of evolution will take another 10-15 years to complete, yet, it is obvious that e-healthcare world will be substantially different from the traditional healthcare one. A few broad areas of difference that emerge from our findings and observations are as follows:

a) **E-enablement of Pharmaceutical Industry**: Though it has been slow to embrace information technology but pharmaceutical industry has experienced the benefits offered by use of information technology and slowly but surely it is adapting to its precept.

b) **E-user Physicians**: Physicians belong to the middle-upper or middle class strata of society and hence are amongst the most educated lot and are technology friendly; hence they are amongst the most profound users of information technology. As the new generation of physician will take over, the use of tools of information technology will be substantial.

c) **E-savvy Pharmacy Retailers**: Amongst the troika of health providers – Physicians; Pharmaceutical marketers and the Pharmacists – retail pharmacists have been slowest to take to information technology. The reason perhaps is their weaker financial status as also their relatively simple work pattern. However growing responsibilities and definite advantages that IT offers, have begun to change the retail landscape also. Retail chains have already appeared on the horizon and new

generation chemists are familiar with Internet and other such technologies. Future pharmacists will use IT to a large extent.

d) **E-Empowered Patient**: Internet has changed the patient considerably. He is no longer a passive observer of his own healing and medication. He participates in the discussion, seeks correct and complete information using IT tools, puts forward his opinion and at times even makes choices. There is a tremendous rise in health consumerism. For patients, health now is much more than just the absence of diseases. Patients now want to live a full life and not a life compromised by medical restrictions. In future the pharmaceutical marketers will ignore this empowered patient at their own cost.

e) **E-Prescriptions**: Not practiced yet in India, it does not even have legal endorsement, but online prescribing is not as remote as some may believe. It offers distinct advantages of speed, ease, security and lesser errors. Once it is accepted marketing would be transformed because then it will be possible to reach a physician at the precise moment he writes prescriptions.

f) **E-Medical Records**: A development not unrelated to the previous point is, that now it is possible to amass, store, analyze and retrieve comprehensive patient information at the click of mouse. This facility will bring some order to the largely fragmented information system we are familiar with so far. Information technology thus, provides us with the possibility of

   i. Having an absolute integration of patient data and information

   ii. Patient Information any time, anywhere to health-care providers

g) **Virtual Care Delivery:** Internet and other information technology tools have made possible to provide care through a virtual environment. People are looking forward for online clinical guidelines. Video-conferencing has helped to create virtual operation theatres and virtual consultancy sessions.

h) **Replacement of Sales Force with Scientific Force**: There was anticipation that virtual sales team in near future may replace the real

sales team we have today. Pharmaceutical firms thus, would begin to communicate with physicians' and pharmacists online. Every one now agrees that this will not happen. But instead of having large persuasive sales force of today we will soon be having science force that will communicate better, will be highly knowledgeable and will be trained to help physicians in establishing outcome differentiation.

i) **Vanishing Intermediaries**: A pharmaceutical company with its own chain of pharmacies or even centralized shipment of medicines directly to the patient is set to arrive. The pharmaceutical distributors, therefore, stand on the brink of extinction, unless they reinvent themselves. This is all set to happen particularly for expensive drugs meant for chronic ailments.

j) **Emergence of Information Intermediaries**: The pharmaceutical industry is not only witnessing a gradual replacement of distribution channels with alternates ones but also emergence of information intermediaries that are gearing up to fill existing communication gaps in an era where information makes the competitive difference.

k) **Fresh Regulatory Norms**: Information technology has rendered many existing regulations ineffectual and has brought forth the need to implement new ones.

Apart from these, from the result and analysis we arrive at substantial and interesting conclusions, suggestions and recommendations. Details of the same are as follows:

1) General

The Trends in investment in IT by Pharmaceutical Firms:

The findings on investment trends in IT by Pharmaceutical companies are interesting and enlightening. Important conclusions are as follows:

a) Pharmaceutical industry lags behind other industries in embracing IT technologies. This was anticipated, as we know that pharmaceutical industry is a conservative sector. It responds to any opportunity or change only with due deliberations.

b) Pharmaceutical industry is making slow but steady investment in information technology. The prevailing investment culture is full of caution and rationalism. There is a strong sense of judiciousness with every decision related to investment in IT. Every single rupee that is invested in information technology is invested keeping in mind the return that is expected. Recently Orchid has gone for an extensive investment in one instance what they call the "big bang approach" but it was not an impulsive decision and rather was very carefully planned and implemented. Their successful implementation has become a case study for SAP, the parent company of the extensive software package and they cite it proudly. The large investment pattern cautious approach is very much in keeping with the trends we find in developed countries.

c) Larger organizations are spending much more in information technology than their smaller counterparts. Multinational organizations, be they Indian or foreign in origin, are at the forefront in adapting IT. This is understandable as they can afford to make such heavy investments and they also need to invest heavily, because of the sheer extent of their operations. If top 10 companies account for 36% of the market it is expected they spend more or less the same on IT also.

d) Implementation of information technology accessories is an evolutionary process. That passes thorough four stages of evolution namely Functional Stage; Integrated Stage; Optimized Enterprise; Stage; Extended Enterprise Stage. This does not only represent investment milestones but learning milestones also. Investment in IT, without corresponding change in mindset of people involved, could be disastrous. Only an elaborate learning process can bring about required change in mindset. As learning is evolutionary in nature, therefore, investment in IT has to be correspondingly evolutionary also.

e) The initial investment is higher in hardware which gradually shifts to software and finally to services.

f) Most companies begin with automation of accounts and office administration. They, thereafter, continue to follow a predictable path of automation. Thus, Enterprise Resource Planning (ERP) packages always are implemented before putting into operation the Customer Relationship Management (CRM) packages. Evolutionary path, in any average pharmaceutical firm, go along following pattern:

   i. Enterprise Application Integration

   ii. Enterprise Resource Planning

   iii. Supply Chain Management

   iv. Customer Relationship Management

   v. Sales Force Automation

   vi. Electronic Data Capturing

g) While most companies are still focused on storage and access, others are leveraging their information to be more agile, gain new insights into business performance and for making better decisions

Suggested future areas of research may include a detailed study of investment in IT in Indian Pharmaceutical industries. The future researchers are suggested to verify that it is the companies that spend intelligently will be more successful than the companies that spend heavily on information technology.

2. Product

Launching New Products

Launching new products is essential for any progressive pharmaceutical firm. Traditionally it not only took a long time for marketers to launch a new product but it lacked the coordination that is vital for any successful launch. Information technology can help in reducing the time required to launch a product. This will be beneficial, as it will not allow competitors to respond in

time. Aventis has shown explicitly, that launch of new product can be improved tremendously using IT tools.

Suggested future areas of research may include confirmation of the conclusions of this study by using survey method of research. Industrial researchers may test this supposition using experimental method.

Drug Compliance

The analysis of results and the subsequent discussions conclude that:

a. IT tools can be employed effectively to improve drug compliance.

b. Health care givers should make use of such a technology to ensure better health and better quality of life for people.

c. Pharmaceutical marketers should be the catalytic agent in this process as it provides them with the opportunity to be responsible players and increase their sales considerably.

d. Since this reminder technology is still in its infancy and information technology itself holds many more promises. However, it is the responsibility of Government, Pharmaceutical Marketers and Health care givers to educate people about the dangers of non-compliance of drugs and train them in the use of IT tools available now for a better future. Technology now exists and hereupon the social scientists and healthcare providers have to take over the battle. Sensitivity and willingness of those involved in providing health care will be the most important determinant of the outcome of our battle.

e. This issue is important for Pharmaceutical marketers too as it provides a vital platform to them to fulfill their sacred obligation to the society by bringing down death and hospitalization and improving the quality of life of patients. This also means larger profits for them through sale of drugs that are not bought .

Suggested future areas of research may include studying use of IT tools with medication requirements:

a. Where Non compliance is a critical problem

b. Chronic conditions, particularly the asymptomatic ones, such as asthma, cancer, depression, diabetes, epilepsy, HIV/AIDS, hypertension and tuberculosis.

c. assessment of available compliance information technologies for different categories of patients such as:

   i. Elderly persons

   ii. Children

   iii. Critically sick

   iv. Patients without familial and social support.

Management Of Rare Diseases

From the study it may be concluded that:

a. Management of rare diseases has always been a challenge for health care providers. Information technology provides, for the first time in human history, a possibility to extend medication to people suffering from such diseases.

b. Apparently the link between IT and treatment of rare diseases has not yet attracted the attention of researchers.

c. Government, NGOs, Healthcare providers and Patient groups can play a very important role in extending medication to this group of patients.

d. Pharmaceutical marketers should take up this opportunity seriously, as apart from allowing them to play a useful social role it also provides them with profitable business opportunities.

e. Small companies can, in fact, find niche markets for themselves by catering to the needs of patients suffering from rare diseases.

Suggested future areas of research may include:

a. Identifying and analyzing successful and unsuccessful case studies involving marketing of orphan drugs.

b. Study of critical factors affecting patient groups, their cohesiveness and ability to find medication at affordable prices.

c. An empirical study to establish a clear link between Information technology and management of rare diseases.

E-prescriptions

E-prescriptions are not common or legal in India so far. They have some definite advantages over hand-written prescriptions. The advantages are important from marketing point of view because:

a. Fewer errors in medication due to e-prescriptions will inspire greater confidence in patients. This will enhance sale of medicines and avoid legal and ethical disputes.

b. It will be possible to influence physicians' decision vis-à-vis choice of brand at the time of writing prescription.

Suggested future areas of research may include confirmation of these conclusions using survey or experimental method of research.

3. Pricing

Pricing is one of the elements of marketing mix. From this study it appears to that information technology has marginal impact on prices of pharmaceutical products. Suggested future areas of research, however, may involve researching the successful and unsuccessful computer-based models for determining prices of drugs under patent.

4. Place

Enterprise Resource Planning

Implementation of ERP results is perhaps the most dramatic enhancement in the marketing related capabilities. It improves the speed of receiving, capturing and analyzing data dramatically. Even the accuracy of information is enhanced. This results in substantial reduction in time to respond to a crisis by making quick decisions. Also, ERP based decisions are proving to be better decisions than the ones that were earlier. Thus, we conclude:

a. Finished goods inventory in post automation period has been brought down spectacularly. This has resulted in major cost cutting for the organization and corresponding increased profits. What is more, the numbers of inventory related mishaps too have come down considerably. Thus, now situations, such as being overstocked in one region and under-stocked in another, have become more or less a phenomenon of past.

b. Forecasting for finished goods requirement is much better and timelier today, than ever before.

c. Orders that required a few days to process are now processed in a few hours. This means a distributor receives goods invariably well in time. This translates to a highly satisfied customer.

d. Pharmaceutical companies report a substantial improvement in receiving payment on time. This is now possible because of proper follow up that has been made possible by information technology based tools.

Suggested future areas of research may include:

a. Identifying reasons for the monopoly that SAP enjoys in pharmaceutical sector despite the presence many software support providers.

b. A comparison of pharmaceutical industry with other industries vis-à-vis success of ERP automation.

Sales Operation

Sales operations do reflect definite improvement with use of IT. Thus, there is a visible improvement in physician and chemist databank for the organizations using IT tools. What is more, updating of such records is simpler and instantaneous. Certain other sales operations, however, show no improvement even with the use of IT. Restructuring of sales territories, number of physicians visited per day and the average time an MR spends with physicians have not improved even marginally. Rather the average time spent with physician has reportedly come down drastically. But we do find improvement in Time to receive daily sales report. It is all set to improve

further and become many times simpler once the web-based technologies become operative. In fact, the daily reports then would be received in real time. The analysis and interpretation of data contained therein would also be made the same day. Even now the analysis, in terms of intensity and extensiveness, has improved substantially.

The dialogue now is two-sided. MRs are listening more and more to physicians and passing up this information to their respective companies. In other words, medicines and their packaging are being done with active participation of physicians. Thus, the evolution of process to transform physicians from consumer to *Prosumers* (producer + consumer) has already begun.

Suggested future areas of research may include a comparison of pharmaceutical industry with other industries vis-à-vis problems and prospects of sales automation.

Market Segmentation

From the results and analysis it is apparent that there has always been an intense need to segment physicians not only on familiar parameters but also on some imaginative and even unique parameters. Though pharmaceutical marketing has been based on one-to-one interaction with physicians, yet, the product and messages are same for physicians, who otherwise, differ considerably. Earlier it was not possible to segment them, but now, with aid of tools of information technology, it is possible to do so in an extraordinarily precise and sophisticated manner. Thus, we can say that

a. IT has helped in evolving segmenting parameters in pharmaceutical marketing to a great extent. The case studies cited provide evidence that there is a great potential in using segmentation to create a niche market.

b. Companies that make use of the new insights, provided to them by psychographic segmentation techniques, have benefited substantially.

c. Under the profound auspices of IT tools pharmaceutical marketing indeed is moving away from mass marketing to micro marketing. Thus,

the future does not belong to those who will come out with one great strategy but to those who will fashion multiple sensible micro-strategies.

d. Information is infinite. This implies that at a deeper level there would be infinite possibilities to data interpretation and make use of that data. There were, good and not-so-good marketers before IT came along and the same will be there after it will become a basic structure for everyone. The good results we find have now are not just a product of IT; rather, the credit goes to those who interpreted it and to those with sound knowledge of marketing, who harnessed it. IT, in other words is not a substitute for marketing skills. It is a medium that magnifies marketing capabilities. The human difference will keep the competitive edge with a few. IT infrastructure apart from hardware and software includes human-ware too.

e. Though most companies in future will use IT based segmentation, but the winners will be those who use IT more creatively and imaginatively. The future, therefore, belongs to the better marketers – those who are more innovative and resourceful strategists, and not necessarily to the ones who invest heavier in IT.

f. GIS and other technologies are being used increasingly to ensure health in a cost effective manner by mapping communities sharing similar life-styles. This should result in more rationale and equitable allocation of resources.

Suggested future areas of research may include:

a. Quantification, measurement and comparison of success of newer segmentation techniques.

b. Measuring the advantage of segmentation based micro-marketing over mass marketing of pharmaceutical products.

c. Measuring the cost reduction and enhanced reach of medication using GIS technology

Retail Marketing

E-pharmacies will have series of implications on vendors, customers and other related parties, Customers may have many possibilities of choosing vendors over the net, but they prefer to buy from a few reliable ones. Thus, sincerity, integrity and honesty will still remain the corner stone of business through e-pharmacies.

e-Pharmacies offer simply too many advantages over traditional pharmacies. Innovation will help online pharmacists to survive and prosper. Internet eventually will bring the physician, the pharmacist and the patient much closer and ensure a healthier and mutually beneficial relationship.

Suggested future areas of research may include confirming the advantages of e-pharmacies that pharmaceutical market experts have predicted. Future researchers may also measure the advantages e-pharmacies bring forth.

5. Promotion

Training and Development of Sales Person

Learning and teaching has been greatly evolved under the influence of Information Technology. The constraints of time and space have been made irrelevant by IT. Pharmaceutical companies are expected to make use of IT tools to enhance learning of their sales force. This is because pharmaceutical industry is a proclaimed knowledge industry and thus, learning is central to it. Conclusions in this regard are as follows:

a. Pharmaceutical companies are using IT tools more and more to train their sales force.

b. Depending upon the individual firm's ability to invest and the IT-maturity of their staff they use following type of learning technologies:

    i. Distribution Technologies

    ii. Interactive Technologies

    iii. Collaborative Technologies

c. Information technology has helped to fashion learning systems that are more suited to adult learners.

d. IT tools have neither decreased the frequency of sales force training sessions nor their time duration. This was found to be linked to the enhanced need to learn now and not the failure of IT tools to achieve these objectives. IT, in other words has been used to enhance the quantity and quality of learning and not to cut costs.

e. IT based learning techniques will not replace class room sessions completely as learning can not be de-linked to live class room learning.

Suggested future areas of research may include identifying and measuring the changed needs of pharmaceutical sales training and also measuring the IT based training outcomes. Comparison of Return on Investment of different training technologies may help in settling down the confusion with regards to various training technologies.

Detailing

Information technology excited the pharmaceutical marketers the most vis-à-vis detailing to physicians. It is in here they saw the inherent possibilities in use of IT. Indeed a general anticipation was that tools of IT would perhaps make huge sales force redundant. It appeared significant because pharmaceutical sales force are a major cost for any pharmaceutical organization. From this study emerges a more sober picture. Thus,

a. It is obvious that sales force of today, which It tools promised to replace, will be here tomorrow also - only their size would be more optimized and their quality will be enhanced dramatically. It will no longer just be sales force but will be a science force.

b. However, e-detailing will play an increasingly more prominent role in detailing. It will supplement and complement the traditional detailing practices and enhance the level of communication between a firm and the physicians. Physicians who cannot be reached temporarily would be overwhelmingly reached using IT tools.

c. The emerging phenomenon of e-detailing has something to offer to all kinds of pharmaceutical firms. Thus:

i. Larger firms with vast army of medical representatives will use e-detailing for intensifying the dialogue with physicians. E-detailing in such cases will supplement traditional detailing efforts.

ii. Medium sized firms with relatively smaller sales force will use e-detailing to complement traditional MR-Physician dialogue. Thus, areas, where they are not able to depute MRs for a short or long duration, will be served using e-detailing technologies

iii. Niche marketers, with tiny or non-existent sales force may use e-detailing as the only or major means of communicating features of their products, to the physicians.

d. Physicians who are reluctant to meet MR also show interest in receiving information via IT tools.

e. With increased familiarity of physicians with Internet, usage of e-detailing too will increase considerably.

f. Even the quality of communication will improve in leaps and bounds.

g. There would be very many models of e-detailing, however, physicians are showing an overwhelming preference for models that empowers them to seek precise but correct information in shortest possible time. They dislike models where they are flooded with information.

h. Physicians trust internet-based information very selectively. Thus, to make e-detailing a success it is vital to establish its credibility amongst physicians. Organizations having low or dubious corporate brand will lose in the race of e-detailing.

i. It is found to be more successful with specialists rather than general physicians. Amongst specialists also it shows evidence of definite advantage with specialties where information and education is more critical – as in oncology.

j. There are critical factors that determine the success of e-detailing application. They are:

i. Sales team support

ii. Real benefits to the customers

iii. Faultless IT execution

iv. Interesting content and communication

v. Learning curve which is difficult to sustain

k. Still newer information technologies are emerging that are more powerful and cheaper. However, as nature of information remains same.

l. C-detailing (Customer detailing) too is emerging as an important means to reach out to the patients.

Suggested future areas of research may include:

a. A detailed study of the problems and prospects associated with e-detailing. So far studies have focused on qualitative aspects of e-detailing, however it is important now to carefully measure the return-on-investment of various e-detailing models.

b. Replicating the study with future tools of information technology.

c. To comprehend the potential of misuse of C-detailing. A careful study of its social cost and benefits is an urgent need of the hour.

Web Conferencing

Web-conferencing provides a much cheaper and in certain instances a much more powerful channel to reach out to the physicians. Market experts from USA consider it to be by far the most effective model of e-detailing

Suggested future area of research may include confirmation of this view.

Information Intermediaries

Information intermediaries too have come to establish themselves. Thus, the process of outsourcing detailing has begun. It is too early to comment on its success or failure.

Suggested future area of research may include detailed study of this new emerging phenomenon.

Sample Distribution

E-sampling has not yet begun in India. It will not replace the traditional method of distributing samples through MRs as sales personnel look upon samples as the trump card in their quest to reach out to the physicians. Also it is expected that extent of e-sampling will be linked to the extent of e-detailing a company practices. In other words, companies that overwhelmingly depend on e-detailing will use e-sampling also. This needs confirmation by future researchers.

Customer Relations Management

It has been obvious all along that pharmaceutical marketing has been built on the bed-rock of CRM. In the absence of tools of IT this approach suffered from severe and even crippling constraints. CRM envisages taking into consideration the views of physicians also but because of lack of proper mechanisms and technology this was not possible and as a result information was bombarded on physicians while their views had no takers. e-CRM, an opportunity provided by IT tools, however, has changed the scenario. Conclusions in this regard are remarkable. They are as follows:

a. Initial attempts to implement CRM have been poor. Such efforts put physicians and even the pharmaceutical industries in a poor light for the reason, that companies looked for short-cuts - simple solutions to what are essentially the complex problems. This could be because of their experiences with ERP implementation. But problems confronting CRM are very different from the problems faced by ERP solutions. Problems that CRM promises to tackle are highly unstructured and varied. They demand high level of ingenuity, innovativeness, creativity and imagination to solve them. ERP was successful because it is possible to reengineer all the processes and functions associated with it. But it is not possible to reengineer a customer. Customer is an entity that is unique, multifaceted, ever changing and often idiosyncratic. Failure of eCRM shows that IT in itself is not a solution, but its use to exploit marketing principles can only lead to success.

b. The newer approaches to implement CRM are better because they look upon physicians as more rational human beings.

c. Successful CRM campaigns depend upon making databases and interactive media like Internet.

d. Instances of successful implementation of micro-strategies shows there is a future for this approach. However, success is rare and difficult to achieve. It will take companies some time to emulate their counterparts in developed countries to be proficient. It does not require the knowledge of IT as importantly as a true understanding of information itself.

e. In future CRM approach will be used to enhance the skill and capability of the physicians to diagnose quickly and correctly and provide successful treatment economically to the patients. In other words the successful future pharmaceutical companies will shift emphasis from selling medicines to disease management.

Suggested future areas of research should focus on identifying success of various CRM approaches.

Direct-to-consumer Communication

Advertising brands to patients directly is not only unethical but illegal also. However Governments have absolutely no control over the information that is available to patients and physicians alike on Internet. It is generally perceived that as long as pharmaceutical firms use direct-to-consumer communication over Internet to enhance disease awareness, for better disease management as also to support physician-patient dialogue, the communication will not only be ethical but will also be beneficial to the society. We can conclude:

a. There is a support for Direct-to-consumer communications amongst Physicians.

b. Apprehension persists in the minds of healthcare professionals regarding the possible misuse of this medium.

c. Modifying behaviour, especially enhancing patient compliance and adherence should be the guiding principles for marketers.

d. There are some laudable endeavors to use this opportunity to provide enhanced and customized services to the patients and help them to live a healthier, happier and more meaningful life.

e. It is the collective responsibility, of all those involved, to empower patients and health care professionals by providing them correct and true details about diverse disease areas. This will help them to make independent decisions. It will improve disease diagnosis and drug compliance tremendously.

f. Some instances of its misuse too have been observed. A few recommendations in this regard are as follows:

    i. Pharmaceutical Marketers must educate people about disease first and then talk about their brand.

    ii. Spend Money on Patient Support Systems.

    iii. Synergies their efforts

    iv. Consider Physicians as partners.

Suggested future area of research may include a comprehensive study of direct-to-consumer trends in India

Ethical Issues

Information technology is powerful but is essentially devoid of any moral sense and hence can be misused and abused. As it adds power, an equal measure of responsibility needs to be evolved by pharmaceutical marketing. Since information will be available at practically no cost the ethical issues involve will pertain to confidentiality, responsible usage and security of that information.

Conclusions in this regards are as follows:

a. New ethical challenges are being thrown up by advent of Information Technology.

b. Response to such challenges demand creativity and insight.

c. We need to constantly practise, evolve and refine it.

Suggested future area of research may include a comprehensive study of ethical and legal requirements of changed scenario.

Cost effectiveness

Following e-technology tips are recommended for a cost effective use of IT in pharmaceutical marketing:

a. Create enduring, reusable material (Archive live events on the web)

b. Distribute content on multiple channels (Web; email; PDA)

c. Anticipate next wave of technology channels.

d. Focus on opt-in and not opt-out strategies.

IT definitely provides us with immense possibilities but it offers nothing to marketers looking for easy solutions. Creativity and insight in using IT technologies will be the most important component of success.

In a nutshell we can conclude that tools of IT can help pharmaceutical marketers in:

a. Increasing revenue and or lower costs

b. Improve quality and efficacy of operations

c. Reaching new customers that we do not reach otherwise

d. Maintaining/improving our existing customer relationships through focused initiatives

But it requires creativity, insight, fundamental knowledge of concepts of marketing and a basic respect for professional ethics.

There are sufficient evidence that data collected, analysed, and interpreted have assisted the researcher in testing the hypotheses formulated at the onset of this research work. These hypotheses have been qualitatively tested only in the face of the observations, findings and conclusions. Since this research work is first of its kind and the nature of the research is exploratory, therefore, it was not possible for the researcher to investigate into the quantitative aspects of the area. The researcher is hopeful that

future researchers will, through their research endeavors, either confirm or refute the conclusions of this work. They may also, within a reasonable period of time, replicate the work. A brief description follows as regards the hypotheses formulated.

Strategies adopted by pharmaceutical industry using information technology have not been significantly effective in marketing their product:

We have seen that despite spending crores of rupees in information technology, pharmaceutical companies have not been able to:

a. Enhance their sales dramatically

b. Could not cut down research and development cost

c. Could not lay out or even reduce their large sales force

Nor do they expect to achieve any of these objectives in future. Their major worry has been extremely high R&D cost and cost to maintain an army of highly knowledgeable medical representatives. E-detailing that was expected to make sales force irrelevant has not even fulfilled a fraction of its promise. Companies now do not expect to enhance sales of their drugs to even an appreciable extent. Thus, it can be safely concluded that tools of IT has not transformed pharmaceutical marketing. It continues to stand upon twin pillars of R&D and army of medical representatives deployed by the companies. Thus, this hypothesis is proved true.

Extent of success in using information technology in marketing pharmaceutical products is low as compared to failure.

There are areas where it seems to have made dramatic improvement. Inventory costs related to finished goods have come down unbelievably. Information that was received in a few days is received in a few hours or even instantly (as is the case with sales force equipped with mobile-phones and corresponding web-technologies) and also it is many times more accurate. Future marketing will be knowledge based, thus, companies using IT to train their sales team continuously will come out winner. But very soon these technologies will be available to most of the players thus: decisive advantage available to them will be lost in near future. Those who will not

equip them with IT arsenals will certainly perish but those having them will not have any added advantage. IT has simply upgraded the competitive edge. Further there are other applications that are yet to be comprehended properly. Applications such as eCRM and e-detailing have not paid the dividends yet, but are expected to come out with delicious fruits once implemented in an intelligent way using marketing principles. Thus, this hypothesis too is proved true.

There are no IT based business models, which may be tried, in the near future for marketing pharmaceutical products.

Business models are certainly emerging and that will make a vital addition to the current marketing practices. Thus, with support from IT, there would be newer emphasis on chronic-disease drugs. It is already happening. A more educated patient, through the responsible use of tools of IT, will look for a normal-life even after suffering from diseases such as diabetes hypertension etc. It is expected that an educated patient will enter into a more meaningful dialogue with the physicians that will enhance the sale of products of trusted companies. Thus, corporate brand image will receive greater emphasis. IT tools are also expected to overcome major losses due to non-compliance of drugs particularly by the patients suffering from life-style diseases. There will be certain shift in pharmaceutical marketing from mass to micro-marketing. Thus, companies that will have a better understanding of segmenting their physicians will flourish. More and more companies will enter market of orphan drugs; thus, will be able to serve markets that remained un-served so far. Detailing will be multifaceted. E-detailing, web-conferencing, conferencing and use of information intermediaries will ensure a more comprehensive dialogue with physicians. Smaller companies that serve orphan drug market will do away with sales forces and depend upon e-detailing and other IT based marketing tools. E-prescription technologies, when implemented legally, will allow companies to reach out to the physicians at the time of writing prescriptions. Direct-to-consumer communications will help companies to reach out to the patients directly, at least, for the safe and trusted products. E-pharmacies will offer greater services to patients and hence will be preferred. E-pharmacies will

play a crucial role to prevent drug-drug interaction, food drug interactions and also reporting the adverse drug interactions. This will make pharmacists more responsible for drug related mis-happenings. Thus, this hypothesis is proved false at operational level.

There are no business opportunities available to different health care providers using information technology for marketing pharmaceutical products.

New opportunities are certainly available, as we have seen earlier. Their extent in terms of market size and profit appears substantive and as result we can expect future market growth to be linked to this also. Thus this hypothesis is proved false at functional level.

Returns of using information technology in marketing pharmaceutical products are low as compared to risk and dangers.

When trying to enter into a dialogue with patients directly or serving markets for orphan drugs or creating close relationship with physicians or reaching out to physicians at the time of prescription through electronic prescription technologies, will certainly be fraught with risks and dangers. Risks and dangers though would be higher because of unethical approach and not necessarily because of use of IT. Genuine accidents in medical treatment are acceptable as per the Supreme Court judgments. Thus, this hypothesis is proved false at functional level.

Though majority of our hypotheses have been proved true and are, therefore accepted. Yet, we find, that in certain respects, the corollaries to the major hypothesis have been rejected. This is because pharmaceutical products in themselves are incomplete without the information/instruction/knowledge associated with them. Thus, while classifying pharmaceutical products as "bits" or "atoms" we have to define a new category falling somewhere in between. Drugs are "atoms" but instructions and information about their usage and storage, are made up of "bits". Thus, it can be said that use of IT tools to market pharmaceutical products may not be as successful as that with "bits" products such as movies, music, software, banking etc. but it will

certainly be more successful than with pure "atoms" such as cars or computers etc.

Also, It is the need of human touch that will always keep pharmaceutical marketing beyond the actual domination of IT.

More and better IT technologies are yet to come. It will be worthwhile to conduct a similar study after a decade also. Once an entire generation of pharma marketing players is IT-friendly, we expect the trends mentioned to gain strength and further prosper.

At length, the basic realism about IT will remain unaffected for pharmaceutical marketing too. It implies that IT tools alone, without inputs of human intelligence, ingenuity and moral values, can not bring a miraculous change.

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APPENDICES

Date: Sun, 28 Dec 2003 08:52:01 -0500

From: "L-Soft list server at HSLC.ORG (1.8e)" <LISTSERV@hslc.org> Add to Addre
Add Mobile Alert

Subject: Welcome to PHARMA-MKTING!

To: "Ajeya Jha" <ajeya611@YAHOO.COM>

Revised: 26 November 2003

Thank you for joining the PHARMA-MKTING e-mail discussion gro
Please keep this message for future reference.

JOIN THE PHARMA MARKETING NETWORK LINK EXCHANGE PROGRAM

You can get your business, organization, or Web site listed F
the Pharma Marketing Vendor Directory
(http://www.pharma-mkting.com/pm-directory.html).

LINK EXCHANGE: Display the Pharma Marketing Network
(see http://www.pharma-mkting.com/images/PMN-M
site with a link to our home page at http://www.
we will enhance your Vendor Directory listing by
100-word description, and link to your Web site.

To get started, fill out the Vendor Listing Request F
http://www.surveymonkey.com/s.asp?u=
to describe your company or organization in quest
Answer "Yes, tell me more" to question #1

WELCOME

Please read the following carefully. It explains how

Appendix II

List of Experts Consulted (Online Discussion Forum)

A. FOREIGN EXPERTS

1. **Mr. John Mack**
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Website: http://www.pharmarc.com

Appendix III

Details of Online Correspondence Held with Market Experts

S. No.	Name of Market Expert	Topic of Discussion	Date
1	2	3	4
1	John Mack	Questions for FDA Public Hearing on DTC	14th Oct. 05
2	John Mack	Building Scientific Muscles in Health Care Marketing	14th Oct. 05
3	Ann Poorboy	New Assault on Pharma Marketing	12th Oct. 05
4	John Mack	New Assault on Pharma Marketing	11th Oct. 05
5	John Mack	eDetailing: Surveys Say	11th Oct. 05
6	John Mack	Fake Pharma Advertising	11th Oct. 05
7	Alfred ONeill	Fake Pharma Advertising	11th Oct. 05
8	Brian Towell	Fake Pharma Advertising	11th Oct. 05
9	John Mack	Fake Pharma Advertising	10th Oct. 05
10	John Mack	Appropriate and Effective Interactions with Thought Leaders	9th Oct. 05
11	C. Spinner	eDetailing: Surveys Say	7th Oct. 05
12	Rebecca O'Donnell	eDetailing: Surveys Say	7th Oct. 05
13	John Mack	eDetailing: Surveys Say	7th Oct. 05
14	C. Spinner	eDetailing: Surveys Say	6th Oct. 05
15	John Mack	eDetailing: Surveys Say	5th Oct. 05
16	Carey Ransom	Internet/E-mail as Communication Mediums between Pharma and Physicians?	4th Oct. 05
17	Mario Cavallini	Bad Data for eDetailing	29th Sept. 05
18	John Mack	Insomnia - The Next DTC Frontier	29th Sept 05
19	John Mack	Rx Communication -- European Style	27th Sept. 05
20	Ken Kirsch	Bad Data for eDetailing	27th Sept. 05
21	David Evgey	Bad Data for eDetailing	27th Sept. 05
22	Hoo, David	Bad Data for eDetailing	27th Sept. 05
23	John Mack	Bad Data for eDetailing	27th Sept. 05
24	John Mack	FDA May Follow PhRMA's Lead on DTC	23rd Sept. 05
25	Lorna Ronald	Use of Information Technology to Market Orphan Rare Disease Drugs	18th Sept. 05
26	Rebecca O'Donnell	Use of Information Technology to Market Orphan Rare Disease Drugs	18th Sept. 05
27	Vivek Ramakrishnan	Use of Information Technology to Market Orphan Rare Disease Drugs	18th Sept. 05
28	Denise Silber	Use of Information Technology to Market Orphan Rare Disease Drugs	18th Sept. 05
29	John Mack	Disease Awareness and Patient Education	12th Sept. 05

Table Continued

Table Continued ....

1	2	3	4
30	John Mack	Online Marketing Ethics	8th Sept 05
31	John Mack	Case Study - Increasing Rep Access	3rd Sept. 05
32	John Mack	Alternative to DTC: cDetailing	26th Aug. 05
33	Brian Towell	Physician Education vs. Promotion	18th July. 05
34	Irene Durham	Physician Education vs. Promotion	17th July 05
35	Rajeeve Baijal	Physician Education vs. Promotion	17th July, 05
36	Michael Kessler	Physician Education vs. Promotion	17th July. 05
37	Sanjay, DR	Details of Indian Pharmaceutical Market	9th June 05
38	John Mack	eDetailing ROI Better than DTC?	6th June. 05
39	Joseph F Despautz	Looking for Case Studies	3rd June 05
40	Leo A. Doran	Looking for Case Studies	3rd June 05
41	Tom Baker	Looking for Case Studies	3rd June 05
42	Eric Rubin	Looking for Case Studies	3rd June 05
43	Babu, Manoj	Looking for Case Studies	3rd June 05
44	Hoang Tran	Looking for Case Studies	3rd June 05
45	John Mack	Pharma e-mail Marketing Best Practices	[illegible]
46	Joel Palmer	Pfizer to Down-size Sales Force by 30%	5th April 05
47	Katherine A. O'Neill	Pfizer to Down-size Sales Force by 30%	4th April 05
48	Wilson Haney	Pfizer to Down-size Sales Force by 30%	4th April. 05
49	Jane Chin	Pfizer to Down-size Sales Force by 30%	4th April. 05
50	Carlos Camozzi	New Segmenting Parameters In Pharmaceutical Industry	23rd Mar. 05
51	Jayesh Mahajan	New Segmenting Parameters In Pharmaceutical Industry	23rd Mar. 05
52	Paul McNiven	New Segmenting Parameters In Pharmaceutical Industry	23rd Mar. 05
53	Wilson Haney	New Segmenting Parameters In Pharmaceutical Industry	23rd Mar 05
54	M. Zeeshan	HR Management for the Sales Force	23rd Feb 05
55	Aytekin Bulut	HR Management for the Sales Force	22nd Feb 05
56	Leonard Cerisano	HR Management for the Sales Force	22nd Feb 05
57	Carlos Camozzi	HR Management for the Sales Force	22nd Feb 05
58	Carlos Camozzi	HR Management for the Sales Force	22nd Feb 05
59	Nadeem Rehmat	HR Management for the Sales Force	22nd Feb 05
60	Leonard Cerisano	HR Management for the Sales Force	22nd Feb 05
61	Jane Chin	HR Management for the Sales Force	21st Feb 05
62	Mario Nacinovich	HR Management for the Sales Force	21st Feb 05

Table Continued

Table Continued ....

1	2	3	4
63	Carpenter, Ray	HR Management for the Sales Force	21st Feb, 05
64	Liaqat Hussain	HR Management for the Sales Force	21st Feb, 05
65	Lawrence Croom	HR Management for the Sales Force	17th Feb, 05
66	John Mack	eMarketing for Pharmaceuticals	17th Feb, 05
67	Paul McNiven	Pfizer Layoffs	11th Feb, 05
68	Robert Dubman	Pfizer Layoffs	11th Feb, 05
69	Frank Kurilla	Pfizer Layoffs	11th Feb, 05
70	Wilson Haney	Pfizer Layoffs	11th Feb, 05
71	Gopalkrishna Iyer	Pfizer Layoffs	11th Feb, 05
72	Ann Hartshorn	Pfizer Layoffs	9th Feb, 05
73	Mike Bishop	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb, 05
74	Mick Majid	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb 05
75	Mark Schmukler	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb 05
76	Terry Nugent	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb 05
77	Dawn Edgerton	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb, 05
78	Terry Nugent	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb 05
79	Terry Nugent	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb, 05
80	Lois Drapin	Pfizer Inc. May Slash its 38,000-member Sales & Marketing Staff	8th Feb, 05
81	Anil Joshi	Impact of Opinion Leader Groups in Indian Pharmaceutical Market	15th Dec 04
82	S. Pranesh	Impact of Opinion Leader Groups in Indian Pharmaceutical Market	15th Dec 04
83	Ashish Sinha	Impact of Opinion Leader Groups in Indian Pharmaceutical Market	15th Dec 04
84	Dilip Phadnis	Impact of Opinion Leader Groups in Indian Pharmaceutical Market	15th Dec 04
85	Pat McGinnis	Impact of Opinion Leader Groups in Indian Pharmaceutical Market	15th Dec 04
86	Pat McGinnis	Impact of Opinion Leader Groups in Indian Pharmaceutical Market	15th Dec 04
87	Ashish Sinha	Impact of Opinion Leader Groups in Indian Pharmaceutical Market	15th Dec 04

Table Continued

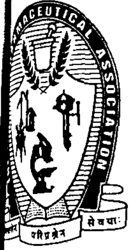
Table Continued ....

1	2	3	4
88	Muhammad Ghiyas	Innovative Idea for Launch of Oral Anti-diabetes Drugs in Indian Market	9th Dec. 04
89	S. Pranesh	Innovative Idea for Launch of Oral Anti-diabetes Drugs in Indian Market	9th Dec. 04
90	Brian Towell	Innovative Idea for Launch of Oral Anti-diabetes Drugs in Indian Market	9th Dec. 04
91	Nitin Jain	Innovative Idea for Launch of Oral Anti-diabetes Drugs in Indian Market	9th Dec. 04
92	John Mack	Indian Companies	8th Sep 04
93	Praveen Singh	Indian Companies	8th Sep. 04
94	Kumar R Ramachandran	Indian Companies	8th Sep 04
95	Javier Oropeza	Indian Companies	27th Aug 04
96	Connie Hampton	Chain Pharmacies	27th Aug 04
97	Joan Petranovich	Chain Pharmacies	27th Aug 04
98	Salil Kallianpur	TRIPS and WTO-- Impact on Developing Countries	27th Aug 04
99	Kashif Butt	TRIPS and WTO-- Impact on Developing Countries	[illegible]
100	Mark Gleason	Market Research Compensation	6th Aug. 04
101	Daniel Nagel	Market Research Compensation	6th Aug. 04
102	Sanchit Nanda	Honoraria Paid to Physicians for Market Research	30th Jul. 04
103	Daniel Nagel	Honoraria Paid to Physicians for Market Research	30th Jul. 04
104	Daniel Alexander	Honoraria Paid to Physicians for Market Research	30th Jul. 04
105	Devender Singh	Honoraria Paid to Physicians for Market Research	30th Jul. 04
106	Mark Gleason	Doctors Like Web for Drug Info. Still Want Perks	28th July 04
107	Terry Nugent	Doctors Like Web for Drug Info. Still Want Perks	28th July 04
108	Esra Guney	Physician Profiling Basics	27th July 04
109	Terry Nugent	Physician Profiling Basics	27th July 04
110	Daniel Ossma	Physician Profiling Basics	27th July 04
111	Christopher Kahl	Branded vs. Unbranded Communications	26th Jul 04
112	John Mack	Branded vs. Unbranded Communications	26th Jul 04
113	Joan Saunders	B2B Marketing in Pharmaceutical Bulk Drugs	25th Jul 04
114	Patrick Blair	Cost of a Pharma Sales Call	21st Jul. 04
115	Mario Cavallini	Price of Drugs	16th Jul 04
116	John Mack	Price of Drugs	16th Jul 04
117	Kumar R Ramachandran	Price of Drugs	16th Jul 04
118	Trevor Blake	Price of Drugs	16th Jul 04
119	Carl Rochlitz	Price of Drugs	16th Jul 04

Table Continued

Table Continued ....

1	2	3	4
120	Peter Wirth	Price of Drugs	16th Jul. 04
121	D. Callahan	Price of Drugs	16th Jul. 04
122	Mark Gleason	Price of Drugs	16th Jul. 04
123	John Mack	Detailing	14th Jul. 04
124	B.C. Swamy	Use of Direct Mailers by CIPLA at India	24th June, 04
125	Marcos Dornelles	Use of Direct Mailers by CIPLA at India	24th June. 04
126	Mahesh	Use of Direct Mailers by CIPLA at India	24th June, 04
127	Salil Kallianpur	Use of Direct Mailers by CIPLA at India	24th June. 04
128	Priti Mohile	Use of Direct Mailers by CIPLA at India	24th June, 04
129	Diana Glaviour	E-pharmacies	16th June, 04
130	Saurabh Goel	Do E-pharmacies Lead to Less Medication Error?	16th June. 04
131	Kathy Curry	Do E-pharmacies Lead to Less Medication Error?	16th June. 04
132	Shalini Srivastava	Do E-pharmacies Lead to Less Medication Error?	16th June. 04
133	Michele Lombardo	Information on IT Tools to Improve Pharma Marketing	16th June 04
134	Daniel Alexander	Information on IT Tools to Improve Pharma Marketing	14th June. 04
135	Derek Lundsten	Information on IT Tools to Improve Pharma Marketing	14th June 04
136	Michele Lombardo	Information on IT Tools to Improve Pharma Marketing	14th June. 04
137	Salil Kallianpur	Information on IT Tools to Improve Pharma Marketing	14th June. 04
138	Mary Jane	Information on IT Tools to Improve Pharma Marketing	14th June. 04
139	Lori Spellman	Information on IT Tools to Improve Pharma Marketing	14th June. 04
140	Terry Nugent	Physician Web Use Historical Trend Data	26th Apr. 04
141	Mark Bard	Effective use of Information Technology for Pharmaceutical Marketing.	16th Jan. 04
142	Mark Bard	Effective use of Information Technology for Pharmaceutical Marketing.	15th Jan 04
143	Mark Schmukler	Effective use of Information Technology for Pharmaceutical Marketing.	15th Jan 04
144	Tim Thieme	Effective use of Information Technology for Pharmaceutical Marketing.	15th Jan 04
145	Lori Spellman	Effective use of Information Technology for Pharmaceutical Marketing.	15th Jan 04
146	Paul Moscarello	Effective use of Information Technology for Pharmaceutical Marketing.	15th Jan 04
147	John Mack	Effective use of Information Technology for Pharmaceutical Marketing.	15th Jan 04



THE INDIAN PHARMACEUTICAL ASSOCIATION (IPA)

Kalina, Santacruz (East), Mumbai - 400 098. India. • Tel.: 91-22-612 2401 • Telefax: 91-22-614 0480
E-mail : ipacentr@bol.net.in • Website : http://www.indianpharma.org/

MISSION

The Indian Pharmaceutical Association (IPA) is the national professional body of pharmacists engaged in various facets of the profession of pharmacy. The IPA is committed to promote the highest professional and ethical standards of pharmacy, focus the image of pharmacists as competent healthcare professionals, sensitize the community, government and others on vital professional issues and support pharmaceutical education and sciences in all aspects.

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr. Ajeya Jha is a Pharmacist and Life Member of Indian Pharmaceutical Association and he is an active member of IPA in Sikkim.

He wants to work on "**Study on the role of Information Technology and the Marketing of Pharmaceutical products**" for obtaining doctorate under the guidance of Dr. L.P. Pateria, Guru Ghasidas University, Bilaspur.

I strongly recommend to support his research work.

S.D. Joag
Hon. Gen. Secretary

Appendix V

Names and Contact Details of Companies Visited

1. **M/s Organon India**

   Head Office
   'Nishuvi', 1st Floor,
   75, Dr. Annie Besant Road,
   Worli, Mumbai 400018
   Phone: 22 56661724-29
   Website : http://www.organon-india.com

2. **M/s Pfizer Limited**

   Head Office
   Pfizer Centre,
   Patel Estate, S V Road.
   Jogeshwari (West),
   Mumbai - 400 102. India.
   Phone : 22 - 5693 2000
   Website : http://www.pfizerindia.com

3. **M/s Ranbaxy**

   Head Office
   Plot 90, Sector 32,
   Gurgaon -122001 (Haryana), INDIA
   Phone: 91- 124- 5135000
   Website : http://www.ranbaxy.com

4. **M/s Aventis [illegible]**

   Head Office
   Aventis House
   5A, Sir Mathuradas Vasanji Road
   Andheri (E), Mumbai 400 093
   Phone: 022-28278000
   Website : http://www.aventispharmaindia.com

5. **M/s Lupin Ltd**

   Head Office
   Laxmi Towers, "B" Wing. 4th Floor
   Bandra Kurla Complex
   Mumbai – 400 051
   Phone: 22 56402222
   Website : http://www.lupinworld.com

6. **M/s Orchid Chemicals and Pharmaceuticals**

Head Office
'Orchid Towers',
#313, Valluvar Kottam High Road, Nungambakkam
Chennai - 600 034 INDIA
Phone: +91-44-28211000 / 28230000
Fax: +91-44-28211002
Website : http://www.orchidpharma.com

7. **M/s Kopran**

Head Office
Parijat House
1076, Dr. E. Moses Road
Worli 400072 Mumbai
Phone: 22 5662 7000
Website : http://www.kopran.com

8. **M/s Baidyanath**

Head Office
Shree Baidyanath Ayurved Bhawan Pvt. Ltd
1 Gupta Lane, Kolkata 700006, India
Phone: 33-2269 2265 / 2266
Website : http://www.baidyanath.com

9. **M/s Indian Herbs Research and Supply Company Ltd.**

Head Office
Post Box No. 5,
Sharda Nagar,
Saharanpur - 247 001,
Uttar Pradesh, India.
Phone: +91-132-725 044, 725 045, 725 046. 725 459
Fax : +91 (132) 726288
Website: http://www.indianherbs.org

10. **M/s Franco-Indian Pharmaceuticals**

Head Office
20, Dr. E. Moses Road,
Mumbai : 400 011
Phone: 91-22-493 4026/27/20
Fax: 91-22-495 0557
Website : http://www.francoindian.com

11. **M/s Khandelwal Laboratories Pvt. Ltd**

Head Office
79/87 D.LADPATH
MUMBAI 400 033, INDIA
Phone: (91) (22)23718238/46
Fax : (91) (22)23739381
Website : http://www.khandelwallab.com

12. **M/s Almet Corporation Ltd.**

Head Office
332, Adhury, Industrial Estate
Sun Mill Compound
Lower Parel
Mumbai

13. **M/s Transflex**

Head Office
Jawahar Nagar, Raipur
Chhattisgarh
Phone : (91)(771) 2226227

Appendix VI

Details of Companies and Persons Contacted

S.No.	Name of the Company	Name of the Person	Telephone Numbers/ e-mail
1	2	3	4
1	Pfizer India Ltd., Mumbai	Mr. Salil Kallianpur	Salil.Kallianpur@pfizer Com
2	Aventis, Mumbai	Mr. C. Ashok Mr. Ramgopal	098203470092 022-28216622
3	Organon India Ltd., Kolkata	Dr. T. Chakraborty Mr. Ajay Sarkar	033-22811671 022-256661724-29
4	Kopran, Mumbai	Dr. Baidyanathan	02192-274025
5	Lupin India Ltd, Mumbai	Dr. A. Nair Mr. Adi Shroff	022-26526103
6	Ranbaxy, Delhi	Dr. Ranjit Barshikar	0124-2343128
7	Orchid chemicals and Pharmaceuticals, Chennai	Mr. A. Ramaswami	044-28211000
8	Franco-Indian Pharmaceuticals, Kolkata	Mr. ML Saha	033-23282750
9	Almet Corporation, Mumbai	Mr. JP Tiwari	09820321841
10	Khandelwal Laboratories, Mumbai	Mrs. Pratibha Omray	022-25677630
11	Transflex, Raipur	Mr. Sunil Boghani	0771-2226227
12	Baidyanath, Kolkota	Mr. S Guhathakurta Mr. S.K. Roy	033-24707480 033-22721070
13	Indian Herbs Research and Supply Company Ltd., Saharanpur	Mr. S. Agarwal	09837010385

Appendix VII

Interview Schedule - I

(For Marketing Executives of Pharmaceutical Firms)

A. Name of the Organization : ____________________

B. Name of the Person : ____________________

C. Position of the Person : ____________________

D. Address : ____________________

E. Phone Number : ____________________

F. Email : ____________________

G. Website : ____________________

1. What is the extent of investment in IT in your organization?

(a) More than Rs. 25 Crore ☐

(b) Rs. 10-25 Crore ☐

(c) Rs. 5 – 10 crore ☐

(d) Less than Rs. 5 Crore ☐

2. What is the anticipated increase in investment in IT for next year (2004-05)?

(a) More than 15% ☐

(b) 10-15% ☐

(c) 5 – 10 % ☐

(d) Less than 5% ☐

3. What is the stage of implementation of IT in your organization?

(a) Extended Enterprise Stage ☐

(b) Optimized Enterprise Stage ☐

(c) Integrated Stage [ ]

(d) Functional Stage [ ]

4. What is the average annual budget kept for investment in IT as percentage of total sales?

___

5. What was the investment pattern in different components of IT last year (2003-04)? (Percentage of Total Investment in IT)

(a) Hardware [ ]

(b) Software [ ]

(c) Connectivity [ ]

(d) Services [ ]

6. Which of the following areas of function has been automated?

S. No.	Functional Area	Response
1	Office Administration	
2	Accounts	
3	Invoice generation	
4	Distribution	
5	Enterprise Application Integration	
6	Enterprise Resource Planning	
7	Supply Chain Management	
8	Sales Force Automation	
9	Electronic Data Capturing	
10	Training of Medical Representative	
11	Customer Relation Management	
12	E-Advertising	
13	E-detailing	
14	Market Segmentation	
15	Market Research	
16	Drug Discovery	
17	Drug Development	
18	Territory Restructuring	
19	Production Planning	
20	Clinical Trials	

7. What is the improvement in time to receive information?

(a) Substantial ☐

(b) Fair ☐

(c) Low ☐

(d) Nil ☐

8. What is the improvement in the accuracy of information?

(a) Substantial ☐

(b) Fair ☐

(c) Low ☐

(d) Nil ☐

9. What is the improvement quality of decision made?

(a) Substantial ☐

(b) Fair ☐

(c) Low ☐

(d) Nil ☐

10. What were the average finished goods at hand?

(a) In 1997 ☐

(b) In 2004 ☐

11. What are the Inventory mishaps in year 2004 as percentage of average mishaps in 1997?

____

12. What has been the order processing time?

(a) In 1997 ☐

(b) In 2004 ☐

13. Number of instances when payment not received in time?

(a) In 1997 [ ]

(b) In 2004 [ ]

14. What level of IT technologies is being used in your organization for training medical representatives?

(a) Distribution Technologies [ ]

(b) Interactive Technologies [ ]

(c) Collaborative Technologies [ ]

(d) None [ ]

15. Has the use of IT tools resulted in shorter duration of course?

(a) Yes [ ]

(b) No [ ]

16. Has the frequency to hold such training been reduced?

(a) Yes [ ]

(b) No [ ]

17. Has the cost to hold such training reduced?

(a) Yes [ ]

(b) No [ ]

18. Will the class room-training will not be required in future?

(a) Yes [ ]

(b) No [ ]

19. What was the number of physicians in your data bank?

(a) In 1997 [ ]

(b) In 2004 [ ]

20. What was the number of pharmacists in your data bank?

(a) In 1997 ☐

(b) In 2004 ☐

21. Have you used IT tools to structure/restructure sales territories?

(a) Yes ☐

(b) No ☐

If Yes,

(i) Has it resulted in lowered traveling cost?

(a) Substantial ☐

(b) Appreciable ☐

(c) Little ☐

(d) No ☐

(ii) Has it resulted in improved coverage?

(a) Substantial ☐

(b) Appreciable ☐

(c) Little ☐

(d) No ☐

(iii) Has it led to more rationalized structure of territory?

(a) Yes ☐

(b) No ☐

22. What was the time required to receive daily reports from the field

(a) In 1997 ☐

(b) In 2004 ☐

23. What has been the level of improvement in the analysis of daily sales report?

(a) Substantial ☐

(b) Appreciable ☐

(c) Little ☐

(d) No ☐

24. What was/is the average number of physicians visited per day by a MR?

(a) In 1997 ☐

(b) In 2004 ☐

25. What was/is the average time a MR spent with a physician?

(a) In 1997 ☐

(b) In 2004 ☐

26. What change has occurred in investment level in R&D in your organization?

(a) Increased ☐

(b) Decreased ☐

(c) Remained Same ☐

27. What do you expect to be the investment level in R&D in your organization in future?

(a) Higher ☐

(b) Lower ☐

(c) Remain same ☐

(d) Can not comment ☐

28. What was your domestic sales turnover (2003-04)?

____

29 What was the number of MR deployed (2003-04)

____

30. What has been the change in size of your sales force in percentage sinc 1997?

____

31. Do you think sales force will not be required in future?

(a) Yes ☐

(b) No ☐

(c) Can not comment ☐

32. Has there been any reduction in the Hierarchy levels in your sales team?

(a) Yes ☐

(b) No ☐

33. Do you think there is loss of market because of low drug compliance?

(a) Yes ☐

(b) No ☐

34. What is the extent of loss of market due to low drug compliance?

(a) 0-10% ☐

(b) 10-20% ☐

(c) 20-30% ☐

(d) More than 30% ☐

35. Do you think because of IT tools, market loss due to low compliance has gone down?

(a) Yes ☐

(b) No ☐

36. Do you think because of IT tools, market loss due to low compliance will go down in Future?

(a) Yes ☐

(b) No ☐

37. Can you suggest some other applications of IT in marketing pharmaceutical products?

(a) ________________________________

(b) ________________________________

(c) ________________________________

(d) ________________________________

Appendix VIII

Interview Schedule-II
(For Physicians)

Name of the Physician: ______________________

Specialization : ______________________

Address : ______________________

____

Phone No. (O) ____________ (R) ____________ (M) ____________

1. **Do you consider the direct-to-consumer (DTC) communications to the patients by pharmaceutical companies ethical?**

(a) Yes ☐

(b) No ☐

(c) Not sure ☐

2. **Does DTC communication improve the quality of interaction you have with the patient?**

(a) Yes ☐

(b) No ☐

(c) Not sure ☐

3. **Does DTC lead to better drug compliance?**

(a) Yes ☐

(b) No ☐

(c) Not sure ☐

4. **Does DTC communication lead to practice of self-medication?**

(a) Yes ☐

(b) No ☐

(c) Not sure ☐

5. **Do you use internet?**

(a) Yes ☐

(b) No ☐

If Yes, Do you use internet for professional purposes?

(a) Yes ☐

(b) No ☐

7. **How often do you use internet for professional purpose?**

(a) Daily ☐

(b) More than once a week ☐

(c) Once a week ☐

(d) Less than Once a week ☐

8. **Has your frequency to use internet increased in last 3 years?**

(a) Yes ☐

(b) No ☐

(c) Perhaps ☐

9. **Do you trust the medical information available at internet?**

(a) Generally Yes ☐

(b) Generally No ☐

(c) Depends on the source ☐

10. **Do you share email address with Medical Representatives?**

(a) Yes ☐

(b) No ☐

(c) Sometimes ☐

11. **Are you willing to receive information from companies on internet?**

(a) Yes [ ]

(b) No [ ]

(c) Occasionally [ ]

12. **Which e-detailing model do you prefer? (Please give ranks)**

1) e-detailing that is carried out by a visiting MR at the Physician's chamber using internet and other facilities during routine visits. Here e-detailing is merely a support to the face-to-face detailing. [ ]

2) e-detailing with the MR talking to the doctor over phone while the physician looks at the e-details over internet or multimedia [ ]

3) Physician views the e-detail independently of the sales representative altogether. [ ]

4) e-detailing is performed during a conference where in leading Physician's are invited. [ ]

5) Doctor's initiate the interaction by visiting prominent disease-websites and Pharmaceutical company-websites to collect whatever information they need. For any further information or to provide more specific details the company responds to the physician's queries. [ ]

Appendix IX

Interview Schedule III

(For Physicians Not Meeting Medical Representatives)

Name of the Physician : ______________________

Specialization : ______________________

Address : ______________________

____

Phone Nos. (O) ____________ (R) ____________ (M) ______

1. How important do you consider the updating of medical information?

(a) Vital ☐

(b) Extremely important ☐

(c) Important ☐

(d) Not important ☐

2. Why do you avoid meeting Medical Representatives?

(a) Do not have time ☐

(b) Do not need ☐

(c) Do not trust ☐

(d) Do not feel comfortable ☐

3. Are you aware of e-detailing?

(a) Yes ☐

(b) No ☐

(c) Vaguely ☐

4. Do you use Internet?

(a) Yes ☐

(b) No ☐

If Yes, Do you use internet for professional purposes?

(a) Yes

(b) No

5. Will you allow companies to provide information via e-detailing?

(a) Yes

(b) No

(c) Depends

6. Which e-detailing model will you prefer? (Please give ranks)

1) e-detailing that is carried out by a visiting MR at the Physician's chamber using internet and other facilities during routine visits. Here e-detailing is merely a support to the face-to-face detailing.
2) e-detailing with the MR talking to the doctor over phone while the physician looks at the e-details over internet or multimedia
3) Physician views the e-detail independently of the sales representative altogether.
4) e-detailing is performed during a conference where in leading Physician's are invited.
5) Doctor's initiate the interaction by visiting prominent disease-websites and Pharmaceutical company-websites to collect whatever information they need. For any further information or to provide more specific details the company responds to the physician's queries.

Contact Details of Individuals / Organizations other than the Pharma Marketing E-mail Group Contacted

A. Individuals

1. **Mr. Brijesh Regal**
   CEO, Apothecaries Pvt. Ltd.
   579, Devli, East Sainik Farms,
   New Delhi 110 062.
   Phone: +91-11-30901111, 30902222, 30903333, 29912012
   Fax : +91-11-29912416
   E-mail : ReachUs@Apothecaries.net
   Website http://apothecaries.net

2. **Ms Diana Glaviour**
   Drugstore.com
   aboutrx@drugstore.com

3. **Ms Lori Spellman**
   Medconference Account Manager
   Maxwell Group
   Northtowne Plaza, 2860 DeKalb Pike
   Norristown, PA 19401
   E-mail: Lori_spellman@maxwelltrain.com

4. **Mr. Sharath Chander,**
   Managing Director
   EonSoft Private Ltd.
   #303, Kamaraj Road,
   Bangalore-560001
   Phone: 91 80 25590412
   Mob.: +91 98450 10499
   E-mail: eonsoft@eonsoftweb.com

5. **Mr. S.K. Nagri**
   Prescription Pharma Support
   A - 1/7 , Indrayudh Society,
   Mitha Nagar , M.G. Road,
   Goregaon West
   Mumbai -400091.
   Fax : 022 - 30974114.
   Mob. : 9892210814.

6. **Ms Varsha Chainani**
Country Manager
IBM incorporation
IBM Global Services India Pvt Ltd
Ground Floor,
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Airport Road,
Bangalore - 560 017
Phone: 1600-425-3333
Fax : 080-2063617

7. **Dr. Viçtoria Hale**
Institute of Oneworld Health
San Francisco
50 California Street
Suite 500
San Francisco, California 94111
E-mail: info@oneworldhealth.org
Website: http://www.oneworldhealth.org

B. Organizations

1. **M/s Ajaxknows**
5, Master Chambers, 1 Cinema Road
Dhobi Talao, Mumbai,
Maharashtra
India 400020
E-mail: info@ajaxcom.com

2. **M/s Bitpipe knowledge alert**
(New Data on Pharmaceutical Industry)
E-mail: ka@bitpipe.com

3. **M/s Genzyme Corporate Offices**
500 Kendall Street
Cambridge, MA 02142
Website: http://www.genzyme.com

4. **M/s Orphan Medical Incorporation**
13911 Ridgedale Drive
Suite 250
Minnetonka, MN 55305
888-8ORPHAN
Website: http://www.orphan.com

Appendix X

List of Secondary Sources

A. Magazines & Newspapers

1) **Business Standard (Daily)**

2) **Business World (Fortnightly)**
ABP Pvt. Ltd. 2nd Floor,
Express Building,
9-10, Bahadur Shah Zafar Marg,
New Delhi 110 002
Phone: 23702170-79; Fax: 23702062

3) **Pharmacy Newsletter**
E-mail: info@ePharmacy.com.au

4) **Express Computer**
Business Publications Division
Indian Express Newspapers
1st Floor, Express Towers
Nariman Point
Mumbai 400021, India.

5) **Express Pharma Pulse (Weekly Magazine)**
Express Pharma Pulse,
Indian Express Newspapers (Bombay) Ltd.,
1st Floor, Express Towers,
Nariman Point, Mumbai-400021. India.
Phone: 56301020, Fax: 022-56301007

6) **In Pharma Industry Review** (weekly newsletter)
Website: http://www.inpharm.com

7) **PC Quest**
CyberMedia, Cyber House,
B-35, Sector-32,
Gurgaon, Haryana - 122 001
Phone: 0124-5031234, 2384816

8) **Pharmaceutical Executive**

9) **Pharma Marketing Blog**
Website: http://www.pharmamkting.blogspot.com

10) **Telemedicine and Telehealth Networks**

B. Websites

b. http://www.fda.gov

c. http://www.rarediseases.org

d. http://www.orpha.net

e. http://www.eurodis.com

f. http://www.doctorswithoutborders

Appendix XII

List of Papers Published

1. *E-Pharmacies: A Few Ethical and Legal Considerations,* Southern Economist Vol 43, Number 1, May 2004.
2. *Emerging Trends in E-pharmacies: An Opinion Survey*, Prestige Journal of Management and Research, April- October 2004.
3. *Use of Information Technology For Launching New Products* Southern Economist Volume 44 Number 9, September 2005.

List of Papers Presented at Conferences

1. *Ethical Use of Information Technology for Marketing Pharmaceutical Products, Presented at the* National Seminar held from September, 23 to 25, 2005 at Institute of Management Studies, Pandit Ravishankar Shukla University, Raipur, Chhatisgarh.
2. *Global Application of Information Technology for Management of Orphan Diseases* at the National Conference on *Globalization and Economic Asymmetries,* held at IIM Kozhikode from December, 15 – 17, 2005.